







PSYCHOLOGY &  
EDUCATIONAL SCIENCES

# **TEACHER PROFESSIONAL DEVELOPMENT FOR ONLINE AND BLENDED LEARNING IN ADULT EDUCATION AND TRAINING**

Dissertation submitted to the Faculty of Psychology and Educational Sciences in partial fulfilment of the requirements for the degree of Doctor in Educational Sciences [Doctor in de Pedagogische Wetenschappen]

**BRENT PHILIPSEN**

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**Psychology and Educational Sciences – Interfaculty Teacher Education**



*Voor Chris Bax*

*“Quand le soleil dit bonjour aux montagnes”*



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## Dankwoord

*“Just a small town dude with a big city attitude”*

*Cher*

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Professor Jo Tondeur. Jo, ik dien je meer dan royaal te bedanken voor je aandeel in dit doctoraat. Ik denk dat zonder jouw bijdrage er van dit doctoraat er in zijn huidige vorm geen sprake had kunnen zijn. Een kleine geschiedenis: we leerden elkaar kennen in het academiejaar 2011 – 2012. Je gaf in samenwerking met professor Van Braak het vak onderwijskundig ontwerpen en hoewel je misschien de eerste les die je aan mij hebt gegeven niet meer herinneren kan, doe ik dat wel. Ik ben goed in het onthouden van dergelijke gebeurtenissen, en zoals je nu al wel weten zal, is in vergelijking mijn geheugen betreffende statistische concepten niet gewoon minder goed maar volledig uit mijn werk- en langetermijngeheugen gekatapulteerd. De eerste les die je gaf ging over educational design research. Termen zoals onderwijskundig ontwikkelen, actie-onderzoek en instructietechnologie werden door de lucht gegooid als appelsienen tijdens carnaval in het Noord-Italiaanse stadje Ivrea. En geloof mij... op dat moment had ik eigenlijk liever appelsienen zien vliegen. Ik begreep er niets van. Maar je zou de gedreven lesgever die je bent niet zijn moest je samen met je collega's niet je uiterste best gedaan hebben om het ons te leren. Je nodigde in één van de volgende lessen professor Ertmer uit en door het geven van een – in omvang best monsterlijke – taak slaagde je collega's en jij er in dat we tegen het einde van de cursus toch grip hadden op de meest belangrijke gedachtegangen van onderwijskundig ontwerpen en de daarbij horende implicaties. Enkele jaren later hoorde ik na mijn afstuderen van enkele andere studenten dat je nog op zoek was naar een aantal doctoraatsstudenten voor een groot project rond online en blendend leren. Hoewel online en blended leren absoluut niet mijn 'dada' was, was het werkpakket



rond professionele ontwikkeling van leraren dat wel. Enkele mails en afspraken later hadden we ons eerste Skype-gesprek. Je vroeg me om mezelf voor te stellen en ik weet nog goed dat mijn eerste zin was: “Hallo, ik ben Brent en ik ben 24 jaar”. Letterlijk de eerste seconde nadat ons gesprek was afgelopen, zei ik tegen mezelf: “Wat voor een blind-date-achtige voorstelling heb ik daar van mezelf gegeven?”. Groot was mijn verrassing toch wel dat ik uiteindelijk – samen met niemand minder Silke die toen al 3 jaar een goede vriendin was en dit enkel nog meer is geworden – mocht starten aan het doctoraatstraject. Ik kan nooit alles in dit korte dankwoord gieten om te omschrijven hoeveel ik van jou heb geleerd. Maar toch een kleine bloemlezing:

- Zonder jou was ik zelfs naar een verkeerd onderwerp onderzoek aan het doen... Ik had mezelf namelijk gericht naar online professionaliseren...en niet naar professionaliseren voor online lesgeven.
- Je bracht me de waarde bij van elke stap minutieus bij te houden in het uitvoeren van systematische reviews, want laat ons wel wezen, ik durf al eens een sloddervos zijn. Het mooie eraan is dat we toch elk onze eigen methodiek hadden. Ik vertrok in mijn review van heel gedetailleerde en specifieke coderingen. En hoewel jij liever vertrekt vanuit een grotere algemene benadering om dan verder te specificeren, had je toch begrip en geloof in mijn manier van werken. Een mooiere symbiose had er niet kunnen zijn.
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- Je geeft ons in elke studie en in elk artikel weer mee hoe belangrijk het is om onderzoeksmatig integer en oprecht te werk te gaan. Je beleeft met passie je job en je gedrevenheid werkt zeer motiverend. Toen je vast in dienst kwam aan VUB, hadden Silke en ik het er nog over dat we beide erg hard hoopten dat je eindelijk je meer dan verdiende titel als prof zou mogen ontvangen. En dit gebeurde ook. Nu is het nog eens aan mij: proficiat!

Ik wil afsluiten met misschien wel datgene wat ervoor gezorgd heeft dat ik ben blijven doorgaan met dit doctoraat. Je professionele competenties zijn onbetwistbaar; maar zeker even waardevol zijn je sociale competenties en je emotionele inlevingsvermogen. In een tijdsspanne van vier jaar

hebben we heel wat wateren doorzwommen. Mijn grootvader is overleden, Gonçalo heeft een zeer zwaar verkeersaccident meegemaakt met de nodige verwerkingsperiode achteraf, mijn eigen gezondheid die het altijd te onpas liet afweten, ... Hoe ongemakkelijk de situatie ook was, je veranderde je rol als promotor op dat moment stevast naar de rol van luisterend oor en een begripvol persoon. En deze laatste dankjewel kan ik geven in naam van mijn ouders, en Gonçalo en mijn vrienden, want zonder jouw luisterend oor had ik denk ik nooit op dezelfde manier door dat proces geraakt. Ik denk bijvoorbeeld aan ons gesprek aan de VUB op het gras, kort nadat ik met mijn hyperventilatie van het ziekenhuis terugkwam. Je was oprecht bezorgd over mijn gezondheid en in naam van alle mensen die ik net opnoemde, en uiteraard van mezelf, bedankt Jo. Bedankt.

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*“Calling all angels, I need you near to the ground”*

*Lenny Kravitz*

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*All out of 90's*

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*“De eeuwigheid begint vannacht”*

*Hans Peter Janssens & Anne Van Opstal*

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*"I gotta be out of my mind not to try this"*

*Alexis Jordan*

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*"Movin' on up, nothin' can stop me"*

*M People*

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*"Oops I did it again"*

*Britney Spears*

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*“Fields of Gold”*

*Sting*

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*“And you can tell everybody this is your song”*

*Elton John*

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*“You see the trouble with me”*

*Barry White*

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*"I believe in dreams"*

*Rebeka Brown*

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*Jannes*

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*"I wanna wrap my hands around your neck"*

*Pink*

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*"I say a little prayer for you"*

*Aretha Franklin*

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*"If I could turn back time"*

*Cher*

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*"We are family"*

*Sister Sledge*

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## List of abbreviations

CFA: Confirmatory Factor Analysis

CFI: Comparative Fit Index

EFA: Exploratory Factor Analysis

ICT: Information and Communication Technologies

ML: Maximum Likelihood

OBL: Online and Blended Learning

OBT: Online and Blended Teaching

OTPD: Online Teacher Professional Development

PD: Professional Development

RMSEA: Root Mean Square Error of Approximation

SRMR: Standardised Root Mean Residual

TLI: Tucker-Lewis Index

TPD: Teacher Professional Development

## List of publications related to the PhD

Philipsen, B., Tondeur, J., Pynoo, B., Vanslambrouck, S., & Zhu, C. (2019). Examining lived experiences in a professional development program for online teaching: A hermeneutic phenomenological approach. *Australasian Journal of Educational Technology*, 35(5).

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## **Nederlandse samenvatting**

Dit proefschrift heeft als hoofddoel het verbeteren van het online en blended volwassenenonderwijs. Om dit doel aan te pakken is er in dit proefschrift aandacht voor drie aspecten: het professionaliseringsprogramma, de lesgever, en de onderwijsinstelling. In wat volgt worden kort de verschillende hoofdstukken en de meest voornamelijk resultaten weergegeven. Deze hoofdstukken richten zich naar de drie aspecten die zojuist werden voorgesteld.

Het eerste hoofdstuk richt zich vooral naar het professionaliseringsprogramma en in de bestaande literatuur is het verrassend om op te merken dat er nog geen raamwerken zijn ontwikkeld die de belangrijke componenten presenteren van een professionaliseringsprogramma dat specifiek gericht is naar online en blended leren. Dus er is een concrete nood aan een raamwerk dat deze specifieke componenten presenteert. Het eerste hoofdstuk van dit proefschrift tracht deze nood te beantwoorden. Door middel van een systematische reviewstudie – gebruik makende van een meta-aggregatie – werden 15 studies nader onderzocht en verder geanalyseerd. Uit deze reviewstudie kwamen zes gesynthetiseerde bevindingen naar boven. Deze gesynthetiseerde bevindingen en de daarbij horende belangrijke componenten worden ondersteund door citaten van lesgevers en trainers. Op die manier wordt er getracht meer duiding te geven over waarom bepaalde componenten belangrijk zijn. Eén van de gesynthetiseerde bevindingen is bijvoorbeeld: heb aandacht voor de veranderingsprocessen van de lesgever, die eigen zijn aan de overgang naar online en blended leren. Hierbij horen de componenten onderwijsopvattingen en professionele identiteit. In een professionaliseringsprogramma voor online en blended leren is het aan te raden om aandacht te hebben voor de professionele identiteit en onderwijskundige opvattingen van de lesgever.

Het tweede hoofdstuk richt zich naar zowel het professionaliseringsprogramma als naar de lesgever en presenteert een case studie over een online professionaliseringsprogramma. In dit hoofdstuk wordt er kort een schets gemaakt van het verschil tussen online professionaliseren en professionaliseren voor online lesgeven. Verder wordt er gekeken naar hoe zowel de coach binnen het programma als de lesgever die deelneemt het traject ervaren. Op basis van een

thematische analyse werden er vijf gedeelde ervaringen geïdentificeerd. Daarnaast werd er ook gekeken naar de mogelijke invloed van het feit dat dit traject online werd aangeboden. Er werd bijvoorbeeld vastgesteld dat het toevoegen van online componenten zowel positieve als negatieve effecten kan hebben. Sommige lesgevers appreciëren de anonimiteit die ze online hebben, terwijl anderen weer angsten vertonen om online fouten te typen en zich dus liever niet in de online omgeving begeven.

Het derde hoofdstuk richt vooral naar de lesgever. Samen met Toll-net werd er een professionaliseringsprogramma opgesteld en uitgerold. Dit programma had als doel lesgevers te introduceren in de wereld van online en blended lesgeven, en dit hoofdstuk presenteert de evaluatie van dat programma. Maar, omdat binnen de wetenschappelijke literatuur er reeds vele evaluaties van professionaliseringsprogramma's gebruik maken van een pre- en postmeting om zo mogelijke effecten vast te stellen, werd er in dit hoofdstuk voor een andere aanpak gekozen. Door middel van een hermeneutische fenomenologie werd er gekeken naar hoe de lesgevers zich voelen doorheen het programma. Er werden over de lesgevers heen vijf gevoelens vastgesteld. Zo ervaren alle deelnemers gevoelens van verantwoordelijkheid, tevredenheid, verbondenheid, frustratie en chaos. Op basis van deze informatie kunnen toekomstige professionaliseringsprogramma's zich sterker richten naar een positieve professionaliseringservaring.

Doorheen de drie andere hoofdstukken is er vooral aandacht voor het programma en de lesgever. Maar als online en blended leren succesvol geïmplementeerd wil worden, dan is er nood aan institutionele ondersteuning. Helaas zijn er nog geen gevalideerde meetinstrumenten voor handen die de perceptie meten van lesgevers wat betreft institutionele ondersteuning voor online en blended leren. Om hier aan tegemoet te komen presenteert dit hoofdstuk de verschillende stappen om een betrouwbaar en gevalideerd meetinstrument te ontwikkelen dat zich richt naar het meten van de perceptie van lesgevers betreffende institutionele ondersteuning voor online en blended leren. De analyses wijzen uit dat het meetinstrument ook daadwerkelijk tot een betrouwbare en valide indicatie kan dienen om van deze percepties een beeld te krijgen.



# **General introduction**

## **Introduction**

Nowadays, information and communication technologies (ICT) offer teachers a vast range of educational possibilities regarding the relationship between education and technology (Laurillard, 2012). Current research shows that teachers are still under-using technology (Shin, 2015; Tondeur et al., 2012) and in order to raise teachers' use of technology, more support is needed (Shin, 2015). Because ICT has made its integration in education there is also a growing number of courses taught in an online and blended learning (OBL) environment (Salmon, 2011). This new digital environment adds an extra knowledge domain that teachers should master. This implies that teachers are expected to not only master pedagogical approaches and content knowledge (Chikasandsa et al., 2013), but are also expected to have sufficient knowledge about teaching – partially – online (Tschida, Hodge, & Smith, 2016). While sufficient teacher professional development frameworks and models exist, stunningly few target OBL. Hence, there is a clear need for a teacher professional development (TPD) framework that targets specifically OBL. Moreover, many studies interchangeably use online TPD and TPD for OBL. The subtle difference between these two approaches is that online TPD specifies the PD's delivery mode while TPD for OBL specifies the subject of the PD. It is argued that online components can affect teachers' dispositions and acceptance towards teaching with technology (van der Meij, Coenders, & McKenney, 2017). Thus, it would be interesting to see if this can be elaborated towards a TPD programme for online teaching. However, most studies only portray the voice of the teacher and immediate changes experienced by teachers (e.g. Glava & Glava, 2010). Thus, from the perspective of a TPD for OBL, there is a need for a closer examination of both the participants' (the teachers') and the coaches' long-term experiences.

A glance through the existing scientific literature leads us to argue that there are already many studies that tackle the essential design features of a professional development programme (e.g. Consuegra & Engels, 2016; Darling Hammond, Hyler, & Gardner, 2017; Desimone & Garet, 2015; Gregory & Salmon, 2013). However, as indicated earlier, a specific focus on OBL is

lacking which sprouts the question what is it that makes TPD for OBL different? One possible difference might be that a bigger emphasis is being put on the teacher's professional identity. A teacher's professional identity contemplates the continuous and contextual process wherein a teacher accredits meaning, value and sets goals to oneself and its profession of being a teacher. This meaning-making process of oneself is based on teachers' current knowledge, skills, attitudes and social networks (Beijaard, Meirink, & Verloop, 2004; Ibarra, 1999; Ibarra & Petriglieri, 2010; Jackson, 2017). By highlighting the emphasis on teachers' professional identity within TPD for OBL, we do not mean that in other TPD approaches there is no attention for teachers' professional identity, on the contrary (e.g. Boylan et al., 2017; Hsieh, 2015), but that in TPD for OBL it might be viewed as a more pivotal element. This can be due to the fact that TPD for OBL entails a psychological change of the teacher-self that is often neglected (Wang, Chen, & Levy, 2010). While other differences certainly exist, teachers' professional identity appears to be one of the most documented (e.g. Baran, Correia, & Thompson, 2011). If teachers' professional identities are an essential component within TPD for OBL (e.g. Baran et al., 2011), then it would be interesting to see how a TPD for OBL affects teachers' professional identities. However, it is not easy to examine and describe teachers' professional identities (Hsieh, 2015) and we wish to avoid a TPD evaluation that makes use of self-report pre- and post-testing questionnaires (with a focus on effectiveness) because this is already more than abundant in the current literature (e.g. Darling-Hammond et al., 2017; Evans, 2014). Far less present is the amount of methodological sound studies done to understand the relationship between TPD and student achievement. Some studies set a well example such as Heller, Daehler, Wong, Shinohara, & Miratrix (2012), however, Evans (2014) states that this is difficult "because the causality that evidences generative impact is impossible to identify and pinpoint" (p. 188).

A possible approach to the examination of teachers' professional identities is by looking at teachers' feelings (e.g. O'Connor, 2008). To illustrate, Saunders (2013) argued that teachers care a lot about how their colleagues perceive them and that it affects their feelings. If we understand more about this process then this might give us an idea about how their professional identity is constructed. Contemporary literature on TPD for OBL does not often integrate these feelings when it comes to the evaluation of professional development initiatives. Thus, because teachers' feelings affect their learning and decision making (Reber & Greifeneder, 2016) and because examining the feelings can give us an idea on how teachers construct their professional

identities (O'Connor, 2008), it is worthwhile to examine which feelings are at play in a TPD for OBL. If online components are to be truly successfully integrated into the teachers' every day practice institutional support is needed (Almpanis, 2015). Institutional support for the implementation and sustainability of OBL already receives much attention in current research on OBL (e.g., Farmer & Ramsdale, 2016; McGee, Windes, & Torres, 2017), and institutional support can affect how OBL courses are designed, implemented and sustained (McGee et al., 2017; Nihuka & Voogt, 2012). Unfortunately, far too often it remains unclear whether or not institutions meet the needs of the teachers (McGee et al., 2017). Furthermore, studies that actually do report on institutional support for OBL hardly validate their measures used (e.g., Elliott, Rhoades, Jackson, & Mandernach, 2015; Lion & Stark, 2010). Hence, there is a clear gap in the current literature on institutional support for OBL, and it entails a lack of validated instruments to measure teachers' perceived institutional support for OBL.

## **Theoretical background**

To better understand the focus and context of this dissertation, the following section presents a theoretical background on three major themes: adult education, online and blended learning, and teacher professional development. This section will be closed with a short examination of the specific Flemish context of this dissertation.

### **Adult education**

A current trend in education is that in the last few decades more attention is given to adult learners (Knowles, Holton, & Swanson, 2015). Following this trend, the notion of lifelong learning receives increasing consideration (Baert, 2014; King & Lawler, 2003). The idea behind this is that in a fast-growing and fast-changing society people – in casu teachers – must be able to create a process of continuous professional learning and development (Beart, 2014; Korthagen, 2017) that ideally would match with their personal qualities (Korthagen, 2017). The concept of lifelong learning is closely related to the highly contextual learning of adults (Baert, 2014; Knowles et al., 2015). This does not mean that learning is limited to specific contexts, on the contrary, the process of lifelong learning is also seen as a life broad process

wherein learning is not only related to economic benefits but also to broader societal development, career paths (Baert, 2014) or personal development trajectories (Korthagen, 2017).

The question of whether or not adults learn differently is one that has been subject to various studies (e.g. Kuhn & Pease, 2006; Simon & Gluck, 2013) and generally it first has to be questioned what is understood exactly by ‘learning’. Is learning seen as the neurological internal process, or is it one’s own control and self-regulatory strategies for remembering information? The vast variety of interpretations of the concept of learning does not make it easy to answer the question if adults learn differently. Research suggests that adults are generally more in control of their learning (Kuhn & Pease, 2006), and Knowles et al. (2015) also refer to this as the self-concept of the learner as it is one of the six core principles of adult learning. These six core principles of adult learning, of course, do not grasp the vast complexity of how adults learn, but these principles indicate that learning environments for adults are complex (Knowles et al., 2015). For adult educators it is consequently not an easy task to create a suitable learning environment for adults. Within this environment, adults usually demand the respect and honour for their adulthood (Knowles et al., 2015). When this “climate of adulthood” (Knowles et al., 2015, p.222) is created, adults show to be more motivated to learn. Next to that, the learning environment should be offering tailor made relevant and rich learning experiences that address specific learning needs and respects the background of the learners (O’Connor, 2014). Furthermore, O’Connor (2014) argues that the time and place of the learning possibilities should be provided in a flexible way. This generally means that adult learners need to be self-directed learners, albeit that one has to keep in mind not all adults will be self-directed learners (Rosen & Stewart, 2015). A possible way of facilitating this self-directedness and to offer flexibility to – adult – learners is to make use of online and blended learning environments (Rosen & Stewart, 2015).

### **Online and blended learning**

Before one can discuss what online and blended learning means for adult education, one has to define online and blended learning. Based on Boelens, Van Laer, De Wever and Eelen (2015), we define online learning as learning that takes place or is instigated deliberately in a completely online instructional context. Online learning can thus be seen as a new way to



orchestrate learning activities (Salmon, 2011). As regards blended learning we again would like to use the definition as proposed by Boelens et al. (2015, p. 2) who describe blended learning as, “learning that happens in an instructional context which is characterised by a deliberate combination of online and classroom-based interventions to instigate and support learning”. Additionally, blended learning is sometimes also described as mixed, hybrid, or combined learning (Alammary, Sheard, & Carbone 2014; Catalano, 2014) and it always targets a combination of distinct approaches to learning and teaching. Rosen and Stewart (2015) describe blended learning as “a teaching and learning model that has a face-to-face class or tutorial component combined with an online learning component” (p. 3). Another example of a definition is the one of Osguthorpe and Graham (2003) who state that “blended learning combines face-to-face with distance delivery systems” (p. 227).

Next to defining blended learning, Rosen and Stewart (2015) argue that teachers need to examine how an online component can be implemented in their teaching practices and how they see themselves as online teachers. Additionally, Craig, Goold, Coldwell, and Mustard (2008) also state that teachers should pay considerate attention to their differing teacher roles in an online environment. Elaborating on Rosen and Stewart (2015) and Craig et al. (2008), it would be interesting to see which online teaching roles teachers are currently adopting. Moreover, some studies suggest that online teaching roles can be more complex than face-to-face roles (Baran et al., 2011; Chang, Shen, & Liu, 2014) which adds relevance to the idea of examining current online teacher roles. In order to get an idea of which online roles are being adopted by adult educators in Flanders Philipsen, Tondeur, Pynoo, and Zhu (2017) administered a survey with adult educators. They selected five possible roles, which were: a developmental role, a social role, an instructional role, an administrative role, and finally an evaluative role. Other similar studies also added a technological role (Alvarez et al., 2010; Chang et al., 2014; Hung & Chou, 2015). This was not done by Philipsen et al. (2017) because they targeted teachers who were already teaching – partially – online and aimed their survey towards teaching activities within the online environment. Thus, in their perspective all of the suggested online teacher roles, also entail a technological role (Philipsen et al., 2017).

Philipsen et al. (2017) argue that the participants of their study mainly adopt an evaluative and an administrative role. This entails for the evaluative role that the adult educators or teachers

mainly provided digitalised feedback and used online features to assess their learners' performances (Chang et al., 2014; Philipsen et al., 2017). The administrative role entails mainly that the adult educators made sure that their learners had easy access to the learning materials and were updated about the practical requirements (Chang et al., 2014; Philipsen et al., 2017). Even though they did not aim to generalise their findings and suggested that the survey used could benefit from further developments, the results indicated that in Flanders many educational possibilities are still undiscovered when it comes to teaching – partially – online (Philipsen et al., 2017). This suggests that teachers could still benefit from following professional development initiatives that support them in adopting an online component into their courses (Redmond, 2011; Salmon, 2011; Stavredes, 2011). Additionally, due to the fact that using online and blended courses is still one of the fastest growing fields in education (Means et al., 2013; Redmond, 2011) many teachers will still need to be trained for the use of online components in their courses (Salmon, 2011; Stavredes, 2011).

### **Teacher professional development**

Research on teacher professional development sprouted several definitions of teacher professional development. Fishman, for example, described professional development as “learning activities related to the profession of teaching” (2016, p.14). Evans, in turn, sees professional development as “The process whereby people’s professionalism may be considered to be enhanced, with a degree of permanence that exceeds transitoriness” (Evans, 2014, p. 188). Next to that, Evans (2014) stresses the importance of recognising the new situation as a ‘better way’ than before. This process of recognising something as a ‘better way’ is essential to internal micro-level processes which are part of professional development (Evans, 2014).

As one can tell from various definitions (e.g. Darling-Hammond et al., 2017; Evans, 2014; Fishman, 2016; Teräs & Kartoglu, 2017) of professional development, they often clearly differ in their terminology. Recently, there has been a shift from the use of the term ‘professional development’ towards the use of the term ‘professional learning’ (Western Governors University, 2017). There is a critique that states that professional development does not always imply that there is professional learning. Unfortunately, the main addressee for this critique is often ‘teacher professional development’ (Western Governors University, 2017).

Without embarking on an etymological endeavour that tries to uncover all the peculiarities of the plethora of definitions, this dissertation will be making use of the term professional development assuming that professional learning could subsequently take place. While it is acknowledged that many other definitions or nuances can be discussed surrounding professional development, this is not within the scope of the present dissertation. The following definitions for professional learning and professional development, which are based on the work of Evans (2014), Teräs and Kartoglu (2017), and Knapp (2003) are presented: Professional development is seen as the behavioural, cognitive, attitudinal or social activities that could enhance peoples' professional learning. Professional learning constitutes the conscious or unconscious phenomenon of the continuous internal processes that change previously held knowledge, attitudes, networks and competences related to peoples' professional practice.

Besides the different approaches towards defining teacher professional development (e.g. Darling-Hammond et al., 2017; Evans, 2014; Fishman, 2016) there are also various teacher professional development models (e.g. Clarke & Hollingsworth, 2002; Desimone & Garet, 2015). An early model of TPD that addressed teacher change was that of Guskey (2002). Guskey (2002) believed that many TPD programmes failed to illuminate the process of teacher change. He therefore created a model of teacher change, and the sequence of his model is presented in Figure 1. According to Guskey (2002), changes in teachers' beliefs and attitudes mainly occur after teachers see evidence of improvements in their students' learning. Therefore, 'student outcomes' are accorded a pivotal role in instigating teacher change in his model.

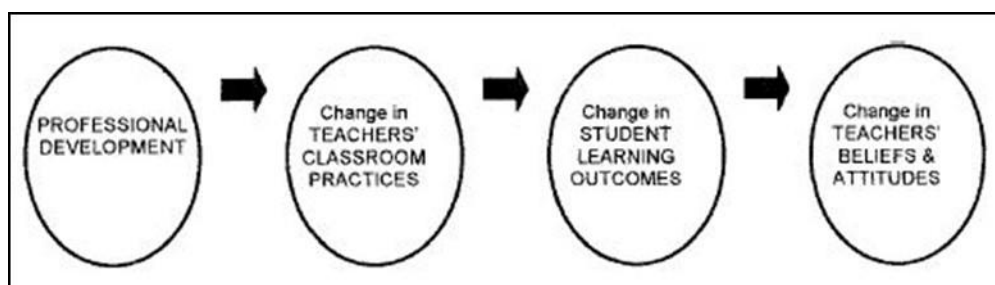


Figure 1. Model of teacher change (Guskey, 2002)

Next to that, this introduction highlights the conceptual framework for assessing the effectiveness of teacher professional development by Consuegra and Engels (2016), which is based on the work of Desimone (2009) and van Veen et al. (2010). Consuegra and Engels (2016) incorporate the five key features of effective teacher professional development indicated by Desimone (2009). However, they add three additional key features, namely, ownership or responsiveness to self-identified needs and interests, an appreciative approach (i.e. strength-based rather than deficiency-based), and, finally, school based (i.e. incorporated into the daily work of teachers). This model is shown in Figure 2.

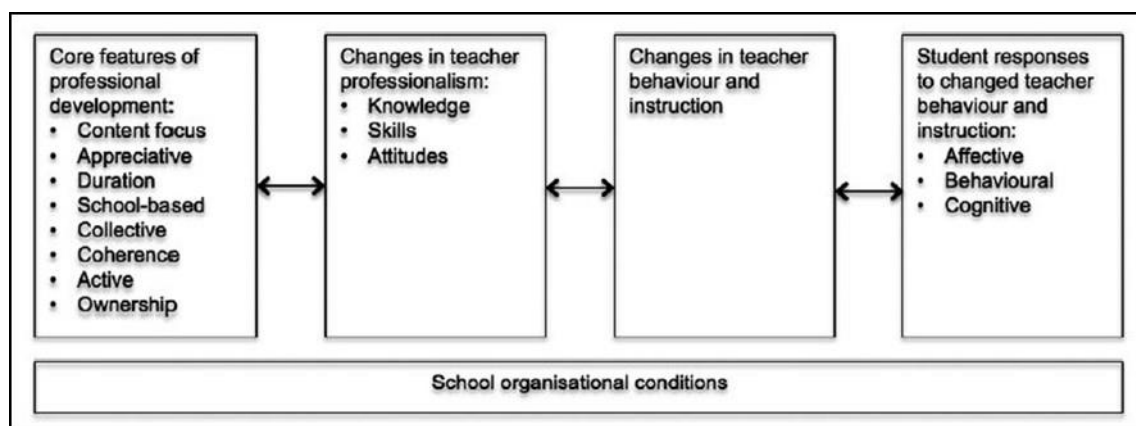


Figure 2. A conceptual framework for assessing the effectiveness of teacher professional development (Consuegra & Engels, 2016)

Both Consuegra and Engels (2016) and van Veen et al. (2010) acknowledge the broader context of school organisational conditions in their conceptual framework. When comparing Guskey's (2002) model of teacher change to Consuegra and Engels' (2016) framework, it is apparent that in Guskey's (2002) sequence, a change in instruction precedes a change in beliefs and attitudes. Consuegra and Engels (2016) however argue that attitudes can also precede a change in instruction. It thus might remain unclear whether pre- and in-service teachers first change their instructional practices and then their beliefs and attitudes, or whether they first change their beliefs and attitudes and then their instructional practices. The current research on these change processes supports both approaches. Scott (2016) argues that some teachers first change their beliefs and then their practices and that others first change their practices and then their beliefs.

A model that aims to target teachers' personal change processes is the one from Evans (2014). She identifies three main components of professional development, namely: behavioural development, attitudinal development, and intellectual development (Evans, 2014). Behavioural development, attitudinal development, and intellectual development refer respectively to one's professional performance, work-related attitudes, and professional related knowledge (Evans, 2014). Furthermore, Evans (2011, 2014) places great emphasis on the recognition of teacher change, a recognition that teachers need to experience when it comes to anchoring changes in everyday practice.

As can be seen when one examines TPD models, some models deliberately integrate student achievement as a key element in their vision of professional development while others do not. This difference gives birth to an often-debated question: should teacher professional development ultimately lead to better student performances before it can be viewed as successful? In this respect, Evans (2014) argued that this view on the successfulness of teacher professional development is often related to the geo-cultural context as can be seen with Edwards and Ellis (2012), Ellis (2007) and Postholm (2012). Evans (2014) states that the pervasive focus on school effectiveness – and whereas effectiveness is often *linea recta* aligned with better student achievement – is more to be found in American research and studies and that this also translates itself into the definitions of professional development (Evans, 2014). She continues by arguing that: “ In other geo-cultural contexts, the professional development of teachers is considered a justifiable end in itself – a worthy focus of study, irrespective of whether or not it may be seen to lead to gains in relation to pupil learning” (Evans, 2014, p. 181). In this dissertation we choose to also see teacher change as a justifiable end of professional development, however keeping in mind that one cannot defy the significance of increased learner performance as an ultimate result of TPD. This implies that within this dissertation we will not necessarily implement an examination of changes in learner performance regarding the evaluation of professional development programmes.

### **The context of this dissertation**

This dissertation was carried out in Flanders, which is the Dutch speaking part of Belgium. The following part will briefly outline the context of the Flemish adult education. Based on its

structure, there are four distinct branches: the centres for basic education, the secondary adult education, the higher professional/vocational education and the specific teacher education. The three last ones are mainly – but not exclusively – provided by adult education centres, which is the main focus of this dissertation.

During the academic year of 2016-2017 there were 328.762 adults enrolled in at least one adult education course (Onderwijs Vlaanderen, 2017). Furthermore, there were 3641 tenured adult educators and 2332 temporary, which results in a total of 5973 teachers (Onderwijs Vlaanderen, 2017). Conclusively, the research done for this dissertation was funded by the Instituut voor Innovatie door Wetenschap en Technologie (IWT), grant number: 140029

## **Problem statements and main objectives**

As presented in the introduction, this dissertation aims to target several lacunas in both the current scientific literature and the practical realities of TPD for OBL. This dissertation has four main objectives which will be given after a short problem statement. These four main objectives have to be put in the larger perspective of this dissertation's main aim, which is aligned with the IWT ALO project: to enhance the quality of OBL in adult education and training. This main aim is tackled by focusing on TPD for OBL. This focus is divided into three aspects: the TPD for OBL programme, the teacher and the institution. In general, two chapters target the TPD programme, one targets the teachers, and one the institution. It has to be stressed that overlap is possible, as this dissertation is a compilation of several distinct yet related studies. In what follows, short problem statements will be given and the related objectives are presented. The problem statements are kept short, as they are a brief reference to the introduction and theoretical background of this dissertation. This short overview presents why this dissertation and its included studies are currently needed.

- 1) While many teacher professional development frameworks and models exist, few target OBL. Hence, there is a clear need for a TPD framework that targets specifically OBL. The resulting first objective is: to construct a framework that presents the important components of a TPD that targets OBL. With as the main research question: Which

components are important for a teacher professional development strategy that targets online and blended learning, and why are they important?

- 2) Online components can affect teachers' acceptance and use of technology (van der Meij, Coenders, & McKenney, 2017) and reports on both the coaches' experiences and the participants' long-term experiences are often missing in the current literature on TPD for OBL. Hence, the second objective of this dissertation is: an examination of the participants' (the teachers') long-term experiences and the coaches' experiences with a TPD for OBL, and whether or not the online features affected these experiences. The main RQ is: Whether or not online features of the professional development affected the coaches' and the participants' experiences?
- 3) Questions arise what it is that makes TPD for OBL different than any other approach on TPD. A possible difference can be that a bigger emphasis is being put on the teacher's professional identity. Thus, it is interesting to see how teachers' professional identity is affected during a TPD for OBL. However, professional identity is not easily defined nor understood (Hsieh, 2015). One way to approach teachers' professional identity is by examining their feelings as they live through certain phenomena (O'Connor, 2008). Thus, in order to better understand teachers' professional identity – in relation to professionalising themselves for OBL – it is interesting to see how teachers live through a TPD for OBL and which specific feelings they experience. Moreover, because teachers' feelings are often neglected in TPD for OBL, this study could add to the existing literature. Thus, the third main objective of this dissertation is to examine which feelings are at play when teachers are living through the moment of TPD for OBL. The main RQ is: How do the participants feel during a professional development programme for OBL?
- 4) If online components are to be successfully implemented in teachers' every day practice, well-considered institutional support is needed (Almpanis, 2015). Even though institutional support for online and blended learning already received a substantial matter of attention (e.g. Farmer & Ramsdale, 2016), there are hardly any validated measures that target teachers' perception of received institutional support. Thus, the fourth and final main objective of this dissertation is: to develop and validate an instrument that targets teachers' perceptions of institutional support for teaching in online or blended environments. The main RQ is: Which validation steps can be taken

in order to construct a valid and reliable instrument to measure teachers' perceptions of institutional support for OBL?

Another reason why this dissertation is needed is already succinctly described in this dissertations' introduction. When we were working on the construction of the instrument to measure teachers' perception of institutional support for online and blended learning, we also examined teachers' current online teaching practices, which is described in a conference paper but which is not integrated into this dissertation. We noticed that teachers who are already teaching in OBL environments mostly use an administrative and an evaluative online teaching role (Philipsen et al., 2017). Thus, many educational possibilities of OBL are not used yet. Actual online teaching was rated as the least enacted role. Thus, we assume that if teachers further develop their knowledge, skills, attitudes and networks in relation to OBL via TPD, that the educational opportunities of OBL environments (Salmon, 2011) might be used to a greater extent. This is another motivation as to why this dissertation is needed.

## **Introduction to the chapters**

Prior to introducing the chapters we will first present a conceptual overview of the studies done. This dissertation mainly focuses on three aspects of TPD for OBL, namely: the TPD programme, the teacher, and the institution. These are by no means the only aspects at play in TPD for OBL. There is the larger contextual aspect, the aspect of steering policy and leadership, etc. Thus, we do not present the following three aspects as the most important aspects of TPD for OBL nor as the only ones. The following figure (figure three) is intended as an advance organiser to guide you as a reader through the different chapters. It is an overview of the main aim of this dissertation: to enhance the quality of online and blended learning in adult education and training. This main aim is tackled by examining three aspects of TPD for OBL.



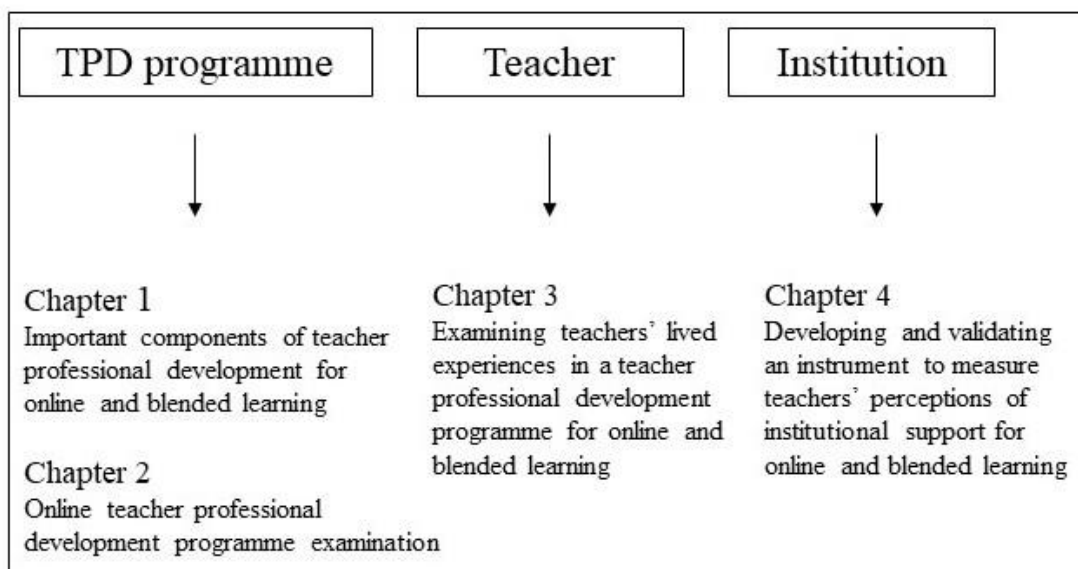


Figure 3. Examined TPD for OBL aspects within this dissertation.

Within the literature it is surprising to notice that no frameworks have yet been developed that present the important components of a teacher professional development programme that specifically targets online and blended learning. Hence, there is a clear need for an overview of specific important components of teacher professional development that targets online and blended learning. Furthermore, in the literature currently present it is often the voice of the trainer or the one of the teacher that is missing. Hence, adding supportive quotes that further strengthen the significance of the specific components could be a useful contribution to the current knowledge on teacher professional development for online and blended learning. This is the foundation of the first chapter presented in this dissertation. This first chapter is based on a study that made use of a systematic meta-aggregative review. The review led to six synthesised findings accompanied by action recommendations.

During the study that preceded the first chapter it became apparent that teacher professional development for online and blended learning is often interchangeably used with online teacher professional development. Although the difference between them is easily differentiated, in that teacher professional development *for* online and blended teaching specifies the subject of the professional development, while online teacher professional development specifies the professional development's delivery mode. Focussing on the latter, it can be argued that online teacher professional development can support teachers in their reflective activities (Prestridge,

2016) and eventually affect their dispositions and acceptance towards teaching with technology (van der Meij et al., 2017). Thus, the second chapter presents a case study that shows a clear example of an existing online professional development. This chapter sheds light on the difference between online teacher professional development and teacher professional development for online and blended learning and aims to elucidate whether or not the addition of online components is experienced positively or negatively by both coaches and participants. This study made use of a thematic analysis and presented five commonly indicated experiences as stated by the coaches and the participants.

To continue, as Knowles et al. (2015) pointed out, emotions play an important role in the learning process of adults. This might also be elaborated towards the learning of teachers. As a third step in the research done for the dissertation presented, a teacher professional development programme for online and blended teaching was co-constructed and subsequently analysed. But rather than choosing for an approach that is already more than abundant in the current literature, such as pre- and post-test meetings with a focus on effectiveness (Evans, 2014), the third chapter focused on capturing the lived experience of teachers. This was done by examining their emotions as they went through a professional development programme for online and blended learning. The study at the base of this chapter made use of hermeneutic phenomenology and indicated five common core feelings amongst the teachers that participated in a professional development programme.

To conclude, until now this dissertation mainly focused on the professional development traits and its specific components, but one cannot neglect the fact that teacher professional development alone is just the tip of the iceberg in the process of implementing online elements into one's course. Additionally, there is institutional support needed if online components are to be truly successfully integrated into the teachers' every day practice (Almpanis, 2015). As the research for this dissertation progressed it became clear that there is no validated instrument that measures teachers' perceptions of institutional support for online and blended learning. Some examples exist, yet they lack to present explicit validation steps (e.g. Elliott et al., 2015; Lion & Stark, 2010). In order to address this gap, the fourth and final chapter will target the development and validation of an instrument that targets teachers' perceptions of institutional support for teaching in online or blended environments. A valid and reliable instrument was

constructed by making use of reliability analysis, exploratory factor analysis, confirmatory factor analysis, and measurement invariance analysis.

To summarise, the following table gives an overview of the four studies presented in this dissertation, with the main research questions and methodology guiding each study.

Table 1: Overview of the four studies presented in this dissertation

Corresp. chapter	Main research questions (RQ) or study aim (SA)	Method
1	RQ: a) Which components are important for a teacher professional development strategy that targets online and blended learning, and why are they important?	Systematic meta-aggregative review - Qualitative
2	SA: a) Describing the programme using a framework to evaluate technology professional development from Lawless and Pellegrino (2007) b) Examining possible differences between the coaches' and participants' experiences and examining whether or not these adhere to the characteristics of meaning-making online teaching as proposed by Salmon (2011) c) Whether or not online features of the professional development affected the coaches' and the participants' experiences.	Thematic analysis of a focus group interview and individual in-depth interviews - Qualitative
3	RQ: a) How do the participants in a teacher professional development programme that targets online and blended teaching feel during the professional development process?	Hermeneutic Phenomenology - Qualitative
4	RQ: a) To what extent are the items measuring the perceived support OBL homogeneous? ( <i>Internal consistency</i> ) b) Which factor structure does the new measure of teachers' perceived support in OBL show? ( <i>Factor structure</i> ) c) To what extent does the identified factor structure show invariance across gender groups? ( <i>Measurement invariance</i> ) d) To what extent are teachers' perceptions of institutional support correlated with other constructs, including TPACK self-efficacy, age, and teaching experience? ( <i>Relations to other constructs</i> )	Reliability analysis Exploratory factor analysis Confirmatory factor analysis Measurement invariance analysis - Quantitative

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# Chapter one: Teacher professional development components for online and blended learning<sup>1</sup>

## Abstract

In order to fully realise the potential of online and blended learning (OBL), teacher professional development (TPD) strategies on how to teach in an online or blended learning environment are needed. While many studies examine the effects of TPD strategies, fewer studies target the specific important components of these strategies. This study addresses that gap by conducting a systematic review of qualitative data consisting of 15 articles on TPD that targets OBL. Using a meta-aggregative approach, six different synthesised findings were identified and integrated into a visual framework of the key components of TPD for OBL. These synthesised findings are the base for the action recommendations which present specific and contextualised suggestions. Taken together, the findings can guide in-service teachers and trainers, together with further research and development efforts that are concerned with TPD for OBL.

*Keywords: distance education; online and blended learning; professional development; technological integration*

## Introduction

The increasing popularity of online and blended learning (OBL) has been particularly notable in the last few years (Salmon, 2011). As a result, many teachers are not only required to have a thorough understanding of pedagogical theories and their teaching subject (Chikasanda et al., 2013), but they are also expected to be – partially – proficient in online teaching (Salmon, 2011; Tschida, Hodge, & Schmidt, 2016). Many teacher professional development (TPD)

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<sup>1</sup> Adapted from Philipsen, B., Tondeur, J., Pareja Roblin, N., Vanslambrouck, S., & Zhu, C. (2019) *Improving teacher professional development for online and blended Learning: A Systematic Meta-Aggregative Review. Educational Technology Research and Development*, doi: 10.1007/s11423-019-09645-8

strategies are therefore designed, developed, and implemented to provide teachers with the opportunity to prepare themselves professionally for teaching in an OBL environment. While a considerable amount of existing research on TPD for OBL targets the immediate changes faced by teachers (e.g. Glava & Glava, 2010), less is known concerning the importance of the specific components of TPD that targets OBL and why these are deemed important. Therefore, the present study examines the important components of a TPD for OBL and presents them in a comprehensive framework. This study consists of the following six parts: A comprehensive overview of the important theoretical background regarding TPD for OBL, the purpose of the study, the methodology used, the results, the discussion and some limitations and, finally, the conclusions.

## **Theoretical background**

### **Teacher professional development**

Teachers with prior experience at any educational level are required to remain well-informed concerning the growth of knowledge in various domains, and they therefore need to continually professionalise themselves (Guskey, 2000, 2002). There are various ways to approach and define TPD, and educational research has made great progress in enhancing our knowledge and understanding of TPD and its processes (Evans, 2014). Many TPD models and frameworks have already been developed, and have made numerous contributions to existing knowledge of TPD. The first conceptual framework outlining TPD that this paper presents is the linear framework of Desimone (2009). She argues that the examination of teachers' professional development has at least two central components, namely, the critical features of effective professional development and an operational theory of how TPD works. In the first component, five critical features are presented that define effective professional development. The core features consist of a content focus, active learning, coherence, duration, and collective participation (Desimone, 2009). Teachers should experience these five core features in professional development if the professional development is to be effective. In her framework, the professional development itself then increases the teachers' knowledge and skills, and affects their attitudes and beliefs, which the teachers then use to improve their instruction and/or their approach to pedagogy, with an increase in student learning as the final result.

According to Desimone (2009), the context acts as an important mediator and moderator in this process. Desimone and Garet (2015) recently revised their previous insights in order to support the refinement of the previously stated five core features of professional development. For example, they place a stronger emphasis on the individual professional development process of each teacher and the key role of leadership (Desimone & Garet, 2015).

Consuegra and Engels (2016) elaborate on the work of Desimone (2009), and van Veen, Zwart, Meirink and Verloop (2010). Their framework retains a very similar approach, with the following reciprocal components: Core features of TPD, changes in teacher professionalism, changes in teacher behaviour and instruction, and, finally, student responses to changed teacher behaviour and instruction. They add three core features to those of Desimone (2009), namely, an appreciative approach that is strength-based rather than deficiency-based, a school-based approach that is incorporated into the daily work of teachers, and an ownership approach that is responsive to self-identified needs and interests. Following van Veen et al. (2010), Consuegra and Engels (2016) also acknowledge the larger context of school organisational conditions in their conceptual framework.

An important factor in many TPD programs is that they fail to elucidate on the process of teacher change (Guskey, 2002). Therefore, this section concludes with an examination of the work of Evans (2014), which conceptualises professional development in a multidimensional way, incorporating behavioural, intellectual, and attitudinal components. Furthermore, Evans (2014) elucidates the changes made within each component that occur due to the personal internalisation processes of in-service teachers involved in professional development. She also clearly defines what she understands as professional development and writes: “professional development is the process whereby people’s professionalism may be considered to be enhanced, with a degree of permanence that exceeds transitoriness” (Evans, 2014, p. 188). Evans states that the notion of professionalism is pivotal in this definition as one always needs to ask “what exactly is it that we are developing or changing when professional development occurs?” (Evans, 2014, p. 188). According to Evans (2014), the answer is people’s professionalism.

## **Teacher professional development for online and blended learning**

Information and Communication Technology (ICT) has enabled the rapid expansion of online and blended courses (Redmond, 2011). Learning and teaching (partially) online is one of the fastest growing fields in the educational use of technology (Means, Toyama, Murphy, & Baki, 2013). The reason for developing online learning programs – whether wholly or partially – is often due to (1) their cost-effective nature, (2) the way they make learning and educational experiences available for those who cannot attend face-to-face education, and (3) the possibility they offer to make instructors and teachers available in places where they would otherwise not have been available (Means et al., 2013). Offering courses online can be seen as a new way of orchestrating teaching and learning (Salmon, 2011) that overlaps with the larger field of distance learning (Means et al., 2013). However, less consensus has been reached on the definition of blended learning, which is often also referred to as hybrid, mixed, or combined learning (Alammary, Sheard, & Carbone 2014; Catalano, 2014). Boelens, Van Laer, De Wever and Eelen (2015, p. 2) describe it as, “learning that happens in an instructional context which is characterised by a deliberate combination of online and classroom-based interventions to instigate and support learning”.

Given the growing number of online and blended courses (Redmond, 2011) and the great changes that have occurred within OBL (Means et al., 2013), the necessity of TPD for OBL becomes apparent. Tschida et al. (2016) argue that in-service teachers who are making the transition from face-to-face teaching to online teaching experience that this involves more than merely placing a course online. This may be due to the fact that many of them miss a benchmark for online teaching (Tschida et al., 2016). Furthermore, engaging in online teaching affects their assumptions and beliefs about teaching (McQuiggan, 2007; Redmond, 2011) and transforms teachers’ pedagogical roles (Copolla, Hiltz, & Rotter 2001; Redmond, 2011). This indicates that online teaching skills are different from those required in face-to-face classrooms (Salmon, 2011). Therefore, being a good teacher in a face-to-face environment does not mean that this will automatically be the same in an online environment (Wolf, 2006).

In order to reach an effective and sustainable implementation of online teaching, a TPD strategy for OBL should address the institutional support and motivation of teachers, and it should also

involve teachers in the design of online courses (Wolf, 2006). When targeting OBL, TPD should challenge teachers to reflect upon their former experiences, and their assumptions and beliefs regarding teaching and learning. If necessary, it should encourage them to transform their assumptions by engaging in pedagogical inquiry, for example (Baran, Correia, & Thompson, 2011). Recent research indicates that teachers who make the transition from face-to-face to online teaching are able to change their teacher identities (Richardson & Alsup, 2015), which indicates the importance of critical reflection on one's own professional identity within TPD for OBL (Baran et al., 2011). Online teaching and its related professional development therefore requires the continual investigation of effective pedagogical practices and teaching possibilities, as technology will continue to evolve (Bailey & Card, 2009). Online in-service teachers need to be supported in finding those practices that can encourage their learners' independence and autonomy in the new online learning environments (Baran et al., 2011). To accomplish this, teachers require new attitudes, skills, and knowledge in order to successfully operate in these new environments (Salmon, 2011). Therefore, the development and training of (new) online teachers is needed (Salmon, 2011; Stavredes, 2011; Wilson & Stacey, 2003; Wolf, 2006).

### **The purpose of this study**

Many existing TPD review studies target general professional development approaches (e.g. van Veen et al., 2010), but a clear focus on online or blended teaching is often missing. Furthermore, few studies examine the possible differences between a more generalised TPD and TPD for OBL. Therefore, the present study aims to target this gap by conducting a systematic review (Petticrew & Roberts, 2006) that targets TPD for OBL. Furthermore, it examines the important components of a TPD for OBL, and presents them in a comprehensive framework. In addition, this study makes use of a meta-aggregative approach. This method offers the possibility of providing stronger qualitative evidence and elucidating patterns across the literature than the findings from single studies allow. Next to that, a meta-aggregative approach entails that the identified categories are aggregated into synthesised findings and that action recommendations are formulated. Additionally, it is important to clearly distinguish synthesised findings from action recommendations. In essence, a synthesis looks at the realities that have occurred in the past (Hannes & Lockwood, 2011), whereas action recommendations aim to inform future initiatives within a specific context (Hannes & Lockwood, 2011). Thus,

in the current review the synthesised findings provide a summary of the results observed in the studies included in the review, and describe patterns observed across them. The action recommendations can inform practitioners and researchers because a meta-aggregative approach aims for a “reliable representation of the primary authors findings and intent, and this contributes to the transparency and auditability [of the review study]” (Hannes & Lockwood, 2011, p. 1637). This transparency and auditability can facilitate the interpretation process of the results (Hannes, 2010) and it is that contextualised interpretation process that can guide practitioners, policy makers and researchers in their decision making (Hannes & Lockwood, 2011; Tondeur, van Braak, Ertmer, Ottenbreit-Leftwich, 2017)

Additionally, this paper elucidates why in-service teachers and trainers appear to find specific components important by including relevant quotations from the studies reviewed. These quotes are included to support the results of this study. Components are seen as adequate when the reviewed paper clearly described the benefit of a certain component. Thus, by extent, components are seen as important when adequate evidence is present. The research question that guides the current study is: Which components are important for a TPD strategy that targets OBL, and why are they important? In answering this research question this paper aims to provide academics and practitioners with a general idea about specific TPD for OBL components.

## **Methodology**

Systematic reviews allow the identification of relevant studies, and assess the validity of each study when reaching a conclusion (Petticrew & Roberts, 2006). For this study, the researchers used a meta-aggregative approach to qualitative evidence synthesis (Hannes & Lockwood, 2011; Joanna Briggs Institute, 2014; Lockwood, Munn, & Porrit, 2015). While it originates in medical science, recent studies indicate that the meta-aggregative approach can justifiably be used in educational research (e.g. Hannes, Raes, Vangenechten, Heyvaert, & Dochy, 2013; Tondeur et al., 2017). The approach focuses on constructing synthesised findings which lead to action recommendations, without reinterpreting the original findings (Hannes & Lockwood, 2011; Hannes et al. 2013; Joanna Briggs Institute, 2014). A meta-aggregation therefore demonstrates a great resemblance to a thematic analysis, but the difference is that in a meta-aggregation one is expected to form action recommendations that can be used in a practical



way (Hannes & Lockwood, 2011). Using a meta-aggregative approach makes it possible to reduce the level of complexity from certain phenomena (Hannes & Lockwood, 2011). In this case the identification of important TPD for OBL components which are supported by unequivocal or credible evidence. The action recommendations or ‘lines of action’ that originate from the themes generated from the papers reviewed can be used to guide and inform policy or practice (Hannes & Lockwood, 2011). Next to that, meta-aggregation involves three distinct phases, which are discussed in further detail in the data analysis.

This study focused solely on qualitative data. This included quotations from trainers, e-learning managers, and teachers, and also the researchers’ conclusions if the authors of this study considered that their – the researchers of the studies reviewed – conclusions were supported by unequivocal or credible empirical evidence. Unequivocal evidence consists of findings that were directly observed or reported on, and that leave little room for interpretation of their meaning (Hannes, 2010). Credible evidence consists mainly of the researchers’ interpretation, but is considered to be plausible with regard to the specific context and theoretical framework (Hannes, 2010). Conclusions and results that were not supported by empirical evidence were not considered for further analysis. It is in a meta-aggregative method a prerequisite that only data supported by unequivocal or credible evidence can be used for analysis. If this evidence is absent for certain conclusions, this solely means that it is not integrated in this study, but not that it is seen as questionable. This is why the authors of this study opted to only use empirical peer-reviewed articles and why they do not include books or book chapters. Although books and book chapters may also be empirical, they do not always provide a clear picture of the methods used. Given that the assessment of the methodological quality of the studies forms an essential part of the meta-aggregative approach, the authors chose to focus solely on empirical peer-reviewed articles that provide a clear description of the methodology followed.

## **Data collection**

The search strategy consisted of using key search-terms in the ISI Web of Science database in order to identify relevant peer-reviewed studies. In keeping with Pynoo et al. (2013), the authors of this study opted for this database for two reasons. Firstly, it is a multidisciplinary database and the articles published in it have undergone peer-reviewed quality control.

Secondly, ISI Web of Science offered a sufficient quantity and variety of journals for the examination of the proposed research question. Thus, as one of the largest and most recognised high impact scientific databases, the Web of Science provided sufficient relevant studies for this research. The key search-terms were: ‘teacher professional development’ or ‘teacher training’ combined with ‘online learning/teaching’, ‘blended learning/teaching’, and ‘e-learning/teaching’.

The authors chose to select research material from 2004 to 2015 in order to provide the most recent information. It is important to note that the current study did not select any articles based on their reported effectiveness or success, the educational level of the teachers, or the geographical location. The authors chose not to select according to educational level because teachers at any educational level are expected to professionalise themselves (Guskey, 2002), and there can certainly be a convergence of challenges in TPD for OBL across different educational levels. The different combinations of key terms led to 1377 possible articles. As a following step in the search strategy, the titles and abstracts of all those studies were examined. A study was considered relevant when it related to the professional development or training of teachers for online and blended learning or teaching, and when it was considered useful, the full text was sought. Therefore, the first inclusion criterion was that the title and abstract must relate to TPD for OBL and that a full text must be available. As a result, 80 different articles were selected for a critical appraisal. This large drop was mostly because many articles focused on online professional development, rather than on professional development for online and blended learning, which is the focus of the current study. Hence, articles were only selected if they referred to professional development for teaching – partially – online. The delivery mode of that professional development (whether face-to-face or online or blended) was not a selection criterion.

The following phase in the search strategy was the critical appraisal. This part of the search strategy entailed the inclusion of two criteria, namely, methodology and ‘fit for research’. The second inclusion criterion was that the authors only selected qualitative or mixed methods research. This was due to the current study’s aim, namely, to identify the important components of a TPD for OBL and to assess why they are considered important on the basis of qualitative data. Of the 80 articles identified, 29 articles had a qualitative or mixed method design. The

final inclusion criterion is that of ‘fit for research’. This means that the study should have TPD for OBL – or teaching in OBL – as its main focus. Studies that reported on teachers’ or other practitioners’ views regarding important TPD components for OBL were also considered suitable for this research as they were able to contribute significantly to the stated research question. Therefore, in this final stage the authors of the present study assessed the 29 remaining articles on the basis of their ‘fit’. Although an initial selection with regard to the topic was made at the first criterion, some of the remaining articles still targeted online professional development rather than professional development for online teaching. Alternatively, they did not prove relevant for the current study, and were subsequently excluded. This resulted in 15 articles that were considered appropriate for further analysis. The authors held discussions to assess the usability of each study and agreed on this final set of articles. The limitations of the meta-aggregative approach are presented in the discussions section. Table 1 presents the number of articles included after each criterion was applied.

Table 1: Number of included articles

Search strategies	Inclusion criteria	Number of articles included
1. Scanning the databases using search terms	1. Written in English and published between 2004 - 2015	1377
2. Examining the titles, abstracts and full-text possibility	2. Targeting TPD for OBL and availability of a full-text	80
3. Critical appraisal of the articles deemed important	3.1 Qualitative or mixed method research	29
	3.2 ‘fit for research’	15

## Data analysis

The present study used an inductive analysis that identified the specific themes that emerged from the data, without using predetermined categories (Patton 2015). The unit of analysis was

the results of 15 studies which had a qualitative or mixed methods research design. Only credible or unequivocal qualitative data was used for the analysis; as described in the introduction of the methodology and data collection. The 15 studies that were identified as suitable were imported into Nvivo10, and their results and conclusions were analysed. The three steps of the meta-aggregation are discussed below and presented in Figure 1.

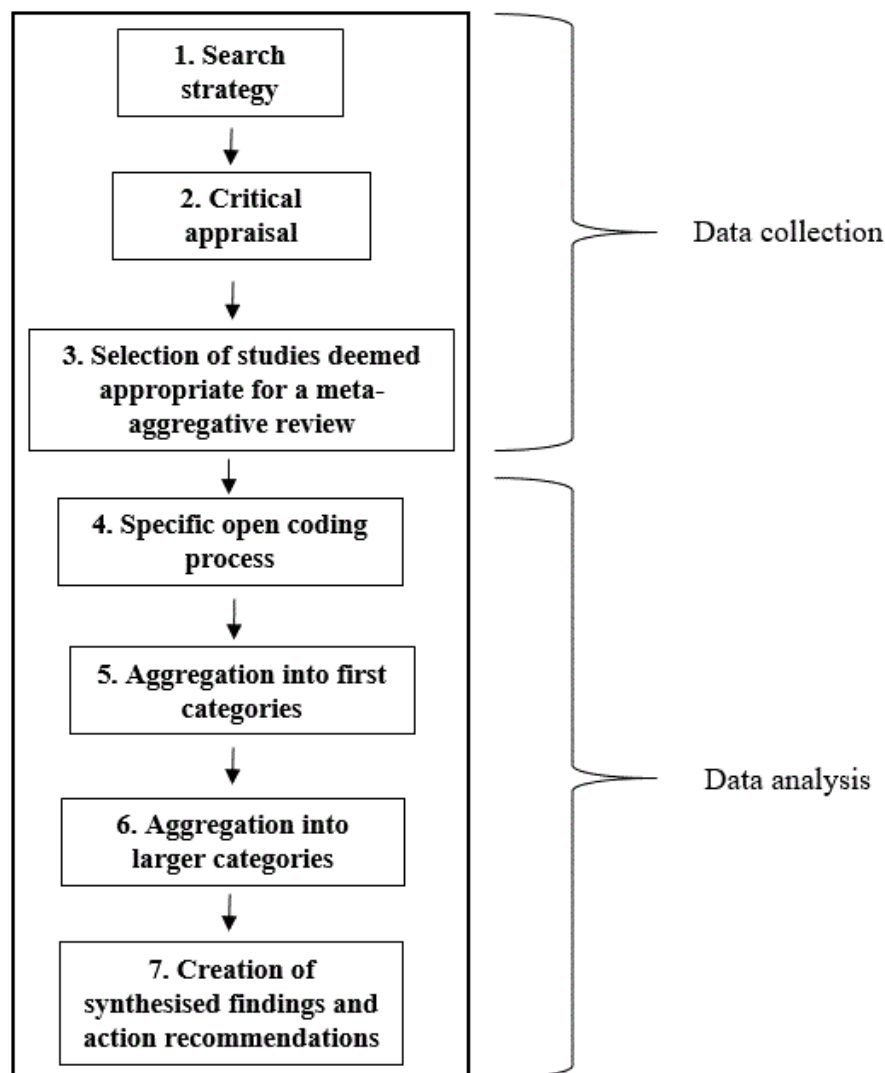


Figure 1: Meta-aggregation process

The first step – see Figure 1: Specific open coding process – involved assembling the findings of the selected studies (Hannes & Lockwood, 2011). In order to do so, the current paper used an open coding (Miles & Huberman, 1994) in which qualitative data from each individual study was coded, and which resulted in 104 different codes. During this coding process data was

coded on the basis of the question: Which components appear to be important for a TPD that targets OBL? To illustrate this, some of the codes identified were: peer feedback, peer assessment, and peer collaboration. The 104 codes were subsequently grouped into different suitable categories using axial coding (Miles & Huberman, 1994) by the same author who did the open coding. This can be seen in Figure 1 with: Aggregation into first categories. To illustrate this, the single codes of peer feedback, peer assessment, and peer collaboration were categorised under the general notion of peer support.

The second step was the aggregation of the identified categories – see Figure 1: Aggregation into larger categories – which was done by identifying the similarities or commonalities between them (Hannes & Lockwood, 2011). This was done by four of the five authors. To illustrate this, ‘peer support’ was seen as a strategy for reaching previously stated objectives. Other identified categories that were seen as a strategy to reach previously stated objectives were ‘confidence and motivation’, ‘reflection’, and ‘experiencing OBL hands-on’. The authors then constructed ‘peer support’, ‘confidence and motivation’, ‘reflection’, and ‘experiencing OBL hands-on’ as one large category, namely, strategies.

In a third and final step, four of the study’s five authors formed synthesised findings (Hannes & Lockwood, 2011), which form the base for action recommendations towards policy and practice. This is presented in Figure 1 with: Creation of synthesised findings and action recommendations. To illustrate this, ‘Acknowledging TPD strategies that are associated with the change to OBL’ led to the action recommendation: ‘Acknowledging TPD strategies such as experiencing OBL hands on, should be directed at supporting teachers in their PD process which could make this process more fluent’.

In order to address the reliability of this study and to determine the consistency an interrater reliability analysis (Cohen’s Kappa statistic) was done during step one of the meta-aggregative approach. The meta-aggregative approach allows for not all the steps of the process to be conducted by multiple researchers (Lockwood et al., 2015). The process of interrater reliability was undertaken by a co-author of the present study who was solely involved in this specific part of the presented research, namely the interrater reliability. Thus, two independent authors individually coded the first five studies. When this was done a coding comparison was done in

Nvivo10. This option compares the degree of agreement between two different coders and gives a score for the interrater reliability. The result indicated a substantial agreement ( $\kappa = .79$ ) among the two raters. Discussions between those two authors were subsequently held to refine the coding scheme. One author then continued with the other ten studies. When the coding process was done, all authors (by exception of the one who was the second coder for the interrater reliability) held discussions on the categorisations and synthesised findings until consensus was reached.

## Results

This section presents the components that emerged from the reviewed studies as they were aggregated into six synthesised findings. Each synthesised finding (SF) is supported by a figure illustrating its construction and presenting supportive quotations as to why the components are important. Table 2 presents a description of the TPD for OBL of each reviewed study. An additional table – in this dissertation added as a figure – in the appendix, presents the main characteristics and contexts of the studies included in the review (e.g. methodology, country of research). Most of the reviewed studies use a case study method ( $n=8$ ) and all but one target in-service teachers, often working at university level (we chose the name teachers rather than lecturers or professors for clarity throughout the whole paper). The frequency of the categories is indicated within the results section of this article (e.g.  $x/15$ ). The supportive figures added to each SF provide a clear image of how the subcategories and main categories lead to the different SF. Each synthesised finding is complemented with an action recommendation at the end of the paragraph that targets that specific synthesised finding.

Table 2. Description of the TPD programme in each study

First author	TPD goal/focus	TPD strategy or programme used	Duration of the TPD
Ching	Develop a web-based application	EdPsych 457 online course where teachers learn from technology about technology	4 weeks
Comas-Quinn	Introduce teachers to blended learning in distance language learning	Two compulsory hands-on sessions with a trainer and voluntary online meetings with a support forum	Not specified (NS)

Cowan	Infuse online technology into classrooms	Teachers observe expert teachers in the latter's own practice on how online environments can affect aspects of classroom practice	5 days
Doering	Enhance teachers' geographic literacy and TPACK	GheoThentic training working with teachers' perceptions of their TPACK, within a TPD aimed at the use of an online environment	1 day workshop
Ernest	Developing teachers' skills for facilitating online group work and identify TPD needs	Project activities with online collaborative group work and training in online teaching and Elluminate, the synchronous conferencing tool	6 weeks
Gregory	Develop an online PD course for and with faculty staff	Adopting the ATIMOD course, the authors set up an intervention process to establish and implement a TPD for online teaching	5 weeks
Guash	Enhance teachers' competences in virtual environments	A workshop conducted by three trainers, all working collaboratively, rooted in the 'E-learning Network for Teacher Training'	1 workshop
Hallas	Inform the design of a TPD programme for flexible learning	Overview of PD activities undertaken for developing online teaching knowledge (no TPD programme described)	Not applicable (NA)
Ham	Increase in knowledge on effective andragogy of online teaching	Reflective experiences on online teaching of two teachers, exploring online modes within their programmes	NS
Macdonald	Illustrate the teaching potential of an online synchronous tool (Elluminate)	Professional development module VLE (virtual learning environments). Choices to illustrate innovative strategies, recorded demonstrations of teaching interventions	NS
Mackey	Develop online learning and teaching experiences through an online course on ICT	Project on teachers' online PD for ICT education, with a focus on network creation by blending online and offline interactions, and its effect	NS
Nihuka	Prepare teachers for the delivery of e-learning courses	Teachers forming Teacher Design Teams (TDT) and collaborative e-learning course design. Two	TDT: 10 weeks

		workshops and five general meetings	
Stein	Present different conceptions on e-learning and TPD for e-learning	No TPD developed. The study describes the conceptions on e-learning and on TPD for e-learning, held by teachers and supportive staff	NA
Wang	Develop pedagogy for teaching through online media	A training programme provided on a synchronous learning management system (Collaborative Cyber Community). It was conducted in two phases: a) an online training and b) an online teaching practice and observation	12 weeks
Wilson	Describe perceptions of effective professional development for e-learning	No TPD developed. A literature review and interviews with e-learning managers on what type of TPD works best for e-learning	NA

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### **Synthesised Finding 1: Design and develop a supportive TPD for OBL programme and environment**

The results indicate that a TPD for OBL should be designed and developed in such a way that teachers are supported throughout the entire professional development process. This entails the provision of regular and just-in-time support and feedback, a well-considered TPD process, and a feasible duration.

The first main category is support and feedback. The results of this review indicate that this support should preferably be received from an educational technologist or an expert within the field (11/15). In conjunction with this, the presence of examples of a possible product is profoundly beneficial and supportive (2/15), and forms a smaller subcategory of ‘support’. With regard to the provision of feedback, four of the 15 articles indicate possible benefits. In her study on the inclusion of online technologies in classrooms, Cowan (2013) relates support and feedback to pedagogical benefits. Furthermore, the support and feedback provided by the facilitators of a TPD that targets OBL can help teachers to identify their learning needs, and can possibly contribute to their knowledge and skills as regards the development of online courses (Nihuka & Voogt, 2012). Therefore, both support and feedback are indicated as important components of a TPD for OBL.



The second main category relates to the intended process or the overall outline of the TPD for OBL (4/15). This may entail a continuous use of the TPD's opportunities (Gregory & Salmon, 2011), a cyclical approach with different iterations (Wang, Chen, & Levy, 2010), or a systematic approach (MacDonald & Campbell, 2012; Nihuka & Voogt, 2012). To illustrate this, a continuous use of the TPD's opportunities could entail that teachers who participated in the programme still can log in to the online platform to see future teachers' questions, discussions and work. It basically means that they still can see all the products, discussions, questions, etc., even though they are not participating anymore. The systematic approach can help the participants of the TPD for OBL to go through the PD step by step, which can help them to focus more on their learning (Nihuka & Voogt, 2012). This intended process thus relates to the general approach within the TPD for OBL.

The final main category at the base of this first SF pertains to the duration of the TPD for OBL. This category is formed by two smaller subcategories, namely, lack of time and the spread of training days. A lack of time is often identified as a potential barrier (11/15) to either participation in PD or to the implementation of OBL. This is illustrated by a teacher in Comas-Quinn's (2011, p. 20) study on the introduction of blended learning in distance language learning: "The second theme that strongly came out of teachers' comments [...], was lack of time [...] with some teachers feeling resentful about what they perceived as an addition to their workload, 'I work part time [...] I have a life outside [...] and other professional commitments. I merely found this irritating'". This quotation suggests that a lack of time can influence teachers' perceptions of TPD for OBL. Spreading out the training days (3/15) has been identified as an important strategy for addressing this problem. In this way teachers might better assess the – personal – feasibility of a TPD (Gregory & Salmon, 2013). Nihuka and Voogt (2012, p. 239) elaborate on this in their study on TPD for the delivery of e-courses: "[He] expressed his concerns as follows: The professional development [workshop] was too short for me because everything was done only in one day". This quotation may indicate that teachers tend to prefer a longer TPD trajectory. The first SF leads to the following action recommendation: To better address teachers' needs, a TPD for OBL should include a supportive environment with regular and just-in-time support and feedback, a well-considered TPD process, and a feasible duration. Figure 2 illustrates how the different categories lead to this first SF and presents supportive quotations.

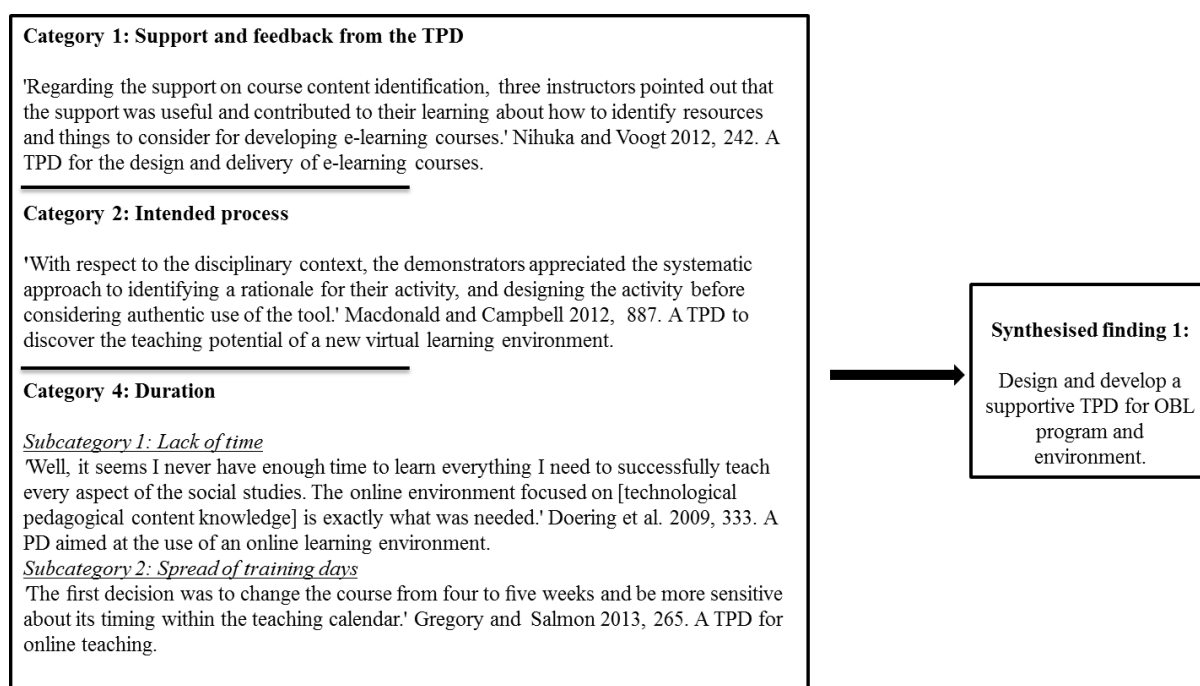


Figure 2: Synthesised finding 1

## Synthesised Finding 2: Acknowledge the existing context towards OBL

Four important categories relating to the institutional context were identified. They include institutional and personal planning, institutional characteristics, possible existing programs for TPD related to OBL, and the financial component.

The first main category underpinning SF 2 refers to careful institutional and personal planning of TPD for OBL (5/15). When institutions and teachers give considerate thought to the planning of the TPD and when the TPD clearly describes the desired activity of the teachers, it is easier to plan the expected workload (Ernest et al., 2012). A senior staff member from Cowan's (2013, p. 92) study on the inclusion of online technologies in the classroom comments on this: "There was no stress on the school day at all. We knew in advance and it was planned so there was no problem with release time. If teachers wish to develop themselves, the school has a commitment to this...". The authors of the current review acknowledge that 'planning' is closely related to the 'time and duration' of the first synthesised finding. However, the difference is that in SF 1 they see this (i.e. the estimated duration of the TPD) as undertaken by the person who develops or offers the TPD, while in SF 2 this is seen as the responsibility

of the institution and the teachers' own planning. The present institutional characteristics form the second main category underpinning SF 2. This category consists of the institutional context and culture, the institutional approach towards TPD for OBL, and leadership. The first subcategory is the institutional context and culture (5/15), which addresses the importance of acknowledging the local context. This is important for the design and implementation of the TPD, but it is also important for facilitating the application of what was learned. In their study on TPD for online teaching, Gregory and Salmon (2013) suggest a clear need to contextualise TPD for online teaching. Contextualising the TPD for OBL can make teachers feel more connected to the TPD (Gregory & Salmon, 2013), such as in the planning of possible tasks. In addition, two of the 15 studies refer to the possible success of institutions providing their own TPD.

The second subcategory is the importance of institutional support (5/15), and the third one is leadership (1/15). While institutional support can help enhance teachers' skills for creating online courses (Nihuka & Voogt, 2012), leadership can influence teachers' dispositions and judgements about online learning (Cowan, 2013). With regard to the latter, Cowan (2013, p. 88) argues that a principal plays a vital role in 'supporting the cultural change' in the transition to OBL. A consideration of existing TPD programs (1/15) forms the second main category at the base of SF 2. For example, Gregory and Salmon (2013) adopted the existing ATIMOD (All Things In Moderation Ltd) e-moderating course and aligned with the local context of their own institution. This can have some benefits, such as reducing costs and heightening sustainability (Gregory & Salmon, 2011). The authors of the current study acknowledge that one study supporting this main category is very low, but argue that the emphasis given to this category, in the study of Gregory and Salmon (2011), has led to its incorporation in the present findings. Furthermore, although only one study supports this main category, it nevertheless adds to the larger synthesised finding, which is to acknowledge the existing context towards OBL. In this respect, the question is not simply how many other studies report on the same main category, but how credible the evidence provided in the reviewed paper is for including the category in the results. In this case, it was judged to be sufficient and credible. Furthermore, it also contributed to the distillation of the action recommendations presented.

The last main category underpinning SF 2 relates to the financial component (e.g. the costs of

the TPD or the costs of replacing the participating teachers) (2/15). A principal acknowledged that, “Lack of funding will certainly limit the number of staff being released...” (Cowan 2013, p. 92). The costs of a TPD for OBL, such as staff replacements and registrations for professional development, can therefore influence the acceptance of (Gregory & Salmon, 2013), durability of, and amount of participation in TPD programs for OBL (Cowan, 2013). The second SF leads to the following action recommendation: To enhance the overall acceptance, a TPD for OBL should acknowledge the existing context of the teachers by taking institutional and personal planning, institutional characteristics, existing programs for TPD related to OBL, and the financial component into account. Figure 3 illustrates how these categories lead to SF 2, and provides supportive quotations.

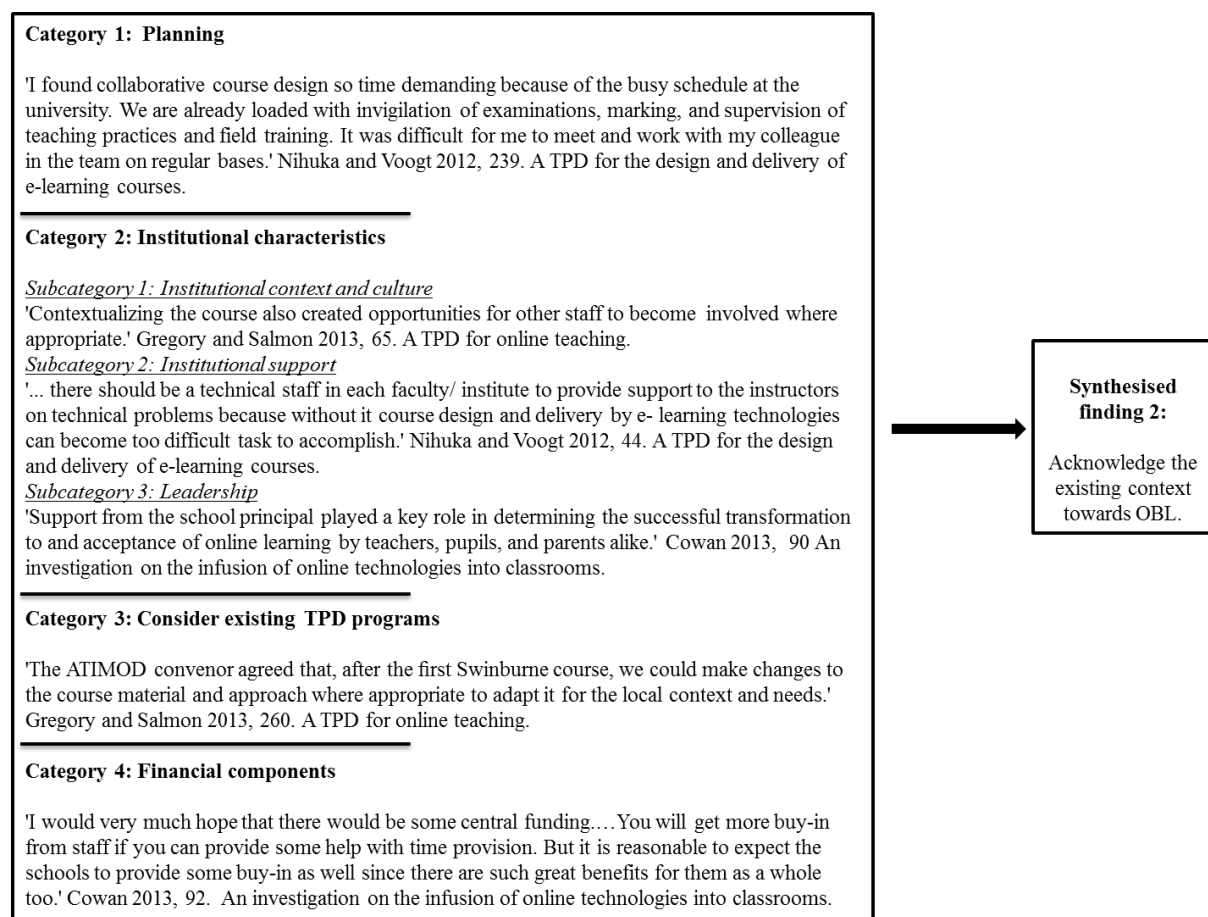


Figure 3: Synthesised finding 2

### **Synthesised Finding 3: Address teacher change associated with the transition to OBL**

As a third SF, this study identified the pivotal role of addressing teacher change. Teachers need to consider the effect of changing to OBL on their professional identity and educational beliefs. Making the transition from a face-to-face to an OBL environment can have a great impact on teachers' self-perception and on their perception of their profession. It is therefore important for teachers to have the opportunity to reflect on the roles that they ascribe to themselves and their students in this new environment.

The first main category underpinning SF 3 is the rethinking of the current roles of teachers (5/15) and students (5/15) within OBL. Stein, Shephard, and Harris (2011) suggest that making the transition to e-learning offers teachers a possibility to approach their educational thinking and practices – that they are often used to for many years and which might have become rather a routine – from a new perspective. Teachers often compare new teaching possibilities within OBL to their former face-to-face classroom teaching practices (3/15). This may be due to the fact that teachers feel more confident in face-to-face classrooms because they have a greater sense of being able to manage the class as they see it best, and to adjust if required (Wang et al., 2010). In their study on their own personal experiences regarding online teaching, Ham and Davy (2005, p. 260) elaborate on the comparison between face-to-face environments and OBL environments by stating that, 'traditional face-to-face group dynamics still tended to be the yardstick by which the value of the teaching–learning experience was judged'.

The second main category at the base of SF 3 relates to teachers' professional identities and educational beliefs (4/15). In their study on the development of pedagogies for teaching through online media, Wang et al. (2010) argue that the transition to OBL often entails a psychological or mental change related to one's professional identity and educational beliefs. This can be dependent on the teachers' willingness to change (1/15). According to Comas-Quinn (2011) the willingness to change one's own professional identity or educational beliefs is strongly related to certain role attributions teachers hold towards themselves and their students – and vice versa – and also how their idea of good education gets brought into their actual practices. Hence, moving to OBL entails examining one's own personal and professional identity, and the possible effects it may have on one's teaching practices. The third SF leads to

the following action recommendation: To address teacher change associated with the transition to OBL, a TPD for OBL should consider the effects of this transition on their professional identity and educational beliefs, providing teachers with the opportunity to re-examine their own professional role and the ones attributed to their students. Figure 4 illustrates how these different categories lead to SF 3, and presents supportive quotations from the different studies reviewed.

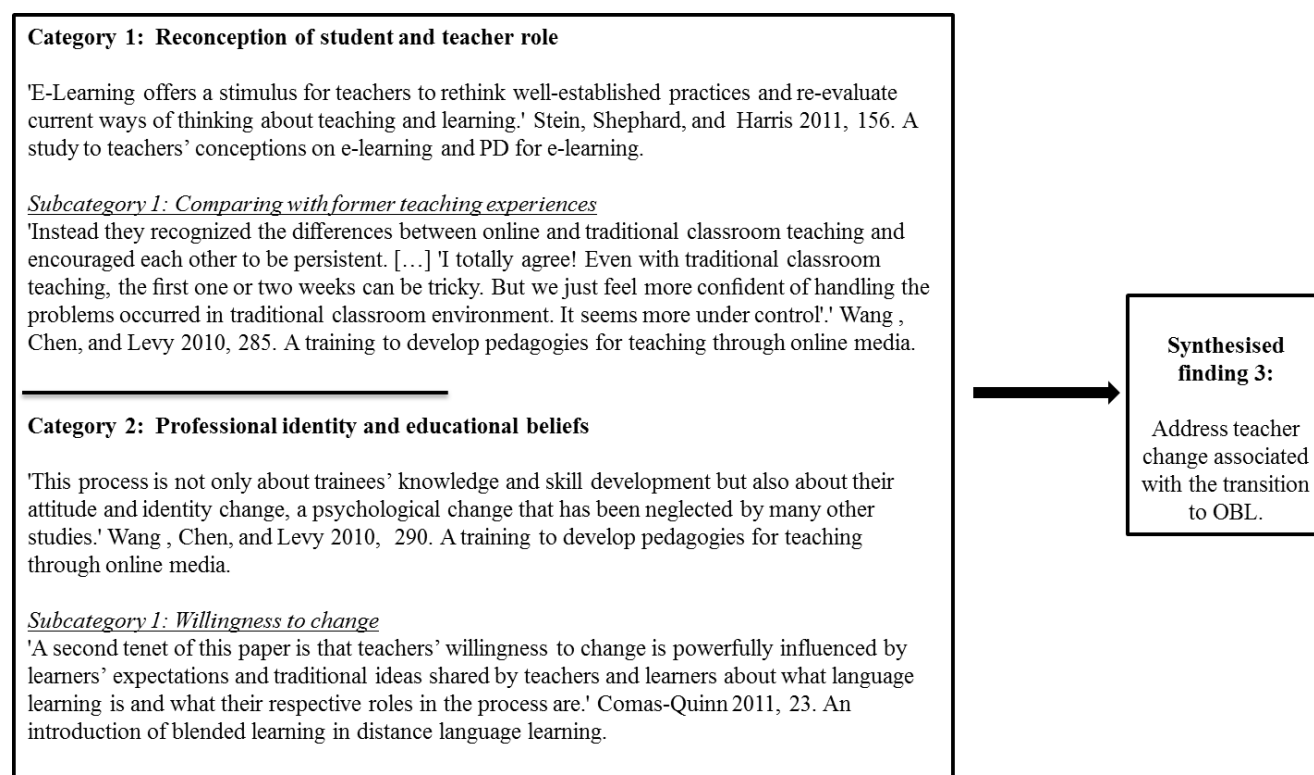


Figure 4: Synthesised finding 3

#### **Synthesised Finding 4: Determine the overall goals and relevance of TPD for OBL**

The overall goals of TPD for OBL can be seen as the desired results of professional development. Teacher educators and trainers need to clearly state their specific goals (i.e. objectives) and the procedures (steps or templates that need to be followed) needed to achieve them, although teachers should also state their own personal goals. Moreover, TPD that targets OBL should be directly relevant to the participating teachers. In this part the procedures might seem quite similar to the intended process of SF1. The difference is that these procedures are linked to reaching prior stated goals. They represent the steps needed to achieve

the objectives of the TPD for OBL. The intended process from SF1 is more directed towards the overall outline of the TPD for OBL.

The first main category at the base of SF 4 is the need to specify goals and procedures. Its subcategories include specific goals (5/15), clear procedures (5/15), and the need to give considerate thought to the content offered by the TPD. Working towards specified goals, and using guiding procedures, can provide teachers with the possibility of focusing more on their learning and might for some teachers even ease the transition process to online course design. (Nihuka & Voogt, 2012). Closely related to the need for specific goals and procedures is the content that is addressed in TPD for OBL. Three knowledge domains were commonly addressed in the studies included in the current review, namely, technological (10/12), pedagogical (12/15), and content specific (2/15) knowledge. Doering et al. (2009, p. 332) indicate that: “All of the teachers felt that the TPACK [Technological, Pedagogical and Content Knowledge] approach to professional development and learning environment design was ‘vital’ as it ‘empowered’ them [...], thus increasing confidence”. Addressing all three knowledge domains can therefore improve a teacher’s level of confidence in teaching with OBL. A second main category underpinning this fourth SF is that of relevance to TPD for OBL. This main category consists of three smaller subcategories, namely, to evoke a transfer to the teachers’ everyday practice, to provide a clear link to the teachers’ learners (i.e. students), and to address the teachers’ current needs. The transfer to practice (12/15) and the extent to which teachers see the merit of TPD for OBL for their own practice (11/15) form the first subcategory of ‘relevance’. Wilson (2012, p. 898) indicates that: “[...], there was a great deal of consensus about how success could be measured, particularly in terms of staff being able to directly apply the skills they have gained through the training”.

If teachers can transfer the TPD’s content to their own practice and acknowledge its merit, they may consider working with OBL (Nihuka & Voogt, 2012). Seeing the merits for their practice may also enable them to see the merits and value for their students. Almost all of the articles state that it is highly recommended that the new online environment, or the new use that is made of it, addresses the needs of the teachers’ students. The students should be able to use the new online technology in a correct and meaningful way (13/15). In their study on teachers’ conceptions of TPD for e-learning, Stein et al. (2011) argue that when students are successfully

learning through the e-learning opportunities provided by the teacher, the teacher receives a kind of a confirmation for the efforts made, and by receiving this they know that they contributed to their students' successes, adding relevance to their jobs. A final subcategory of 'relevance' is that TPD that targets OBL will ultimately need to address the current needs of the teachers participating in the TPD (4/15). Tailoring professional development to the needs of the participants can enhance the perceived relevance of the professional development (Stein et al., 2011). The fourth synthesised finding leads to the following action recommendation: To tailor for teachers' needs and increase relevance, a TPD for OBL should set clear objectives and procedures. Figure 5 illustrates how these categories lead to SF 4, and presents supportive quotations.

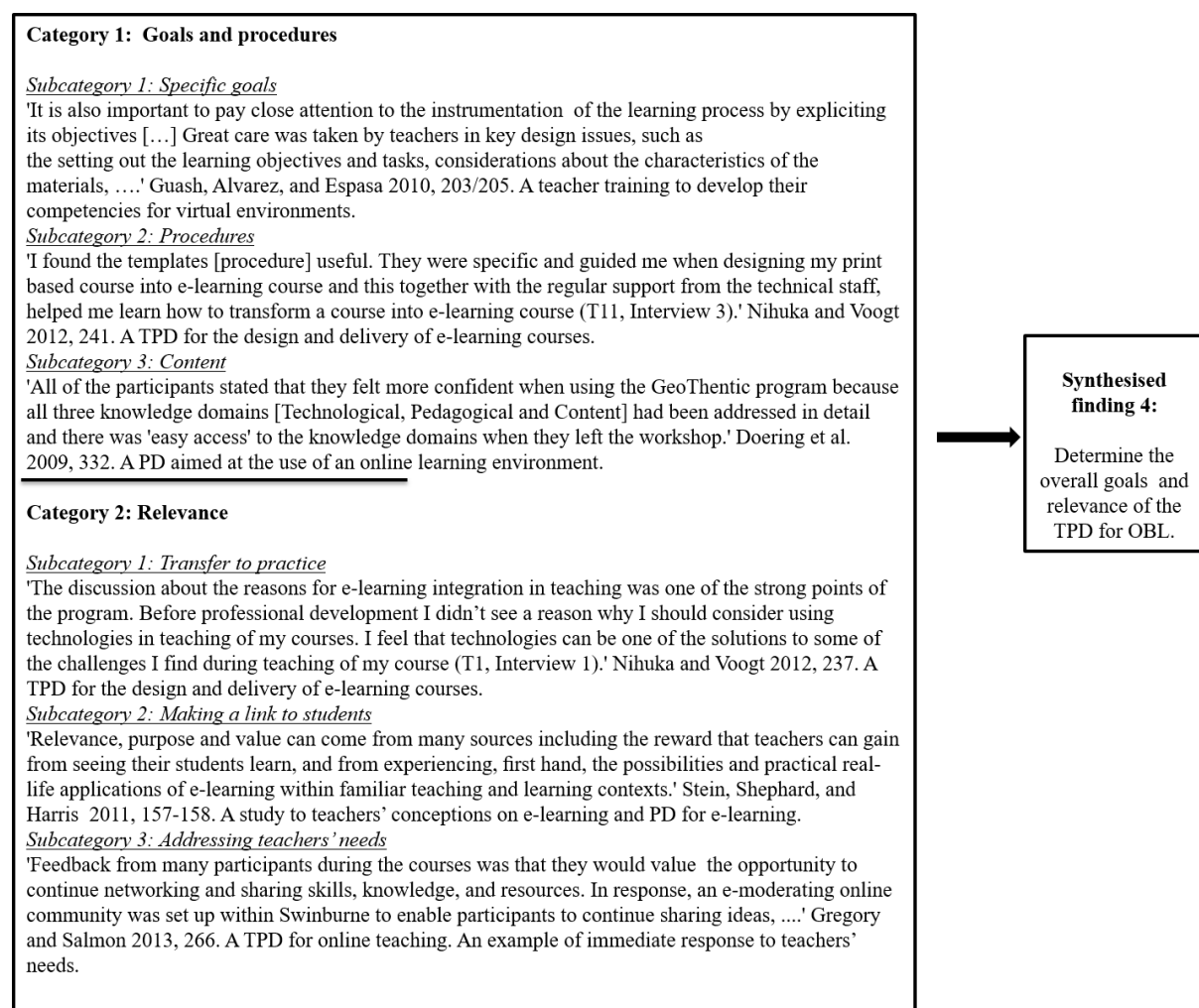


Figure 5: Synthesised finding 4



### **Synthesised Finding 5: Acknowledge teacher professional development strategies associated with the change to OBL**

The studies reviewed proposed several strategies for reaching the overall goals of TPD for OBL. These strategies were directed at facilitating teacher reflection, providing opportunities for teachers to experience OBL in an active way, promoting teachers' confidence and motivation in using OBL, and peer support. The authors of the present review opted to place the support offered within and by the TPD under SF 1. This is because it is seen more as a part of the initial design that plans in advance how to support teachers, while SF 5 is more concerned with specific teacher actions and dispositions during the professional development. However, the authors acknowledge that different researchers may hold different opinions on the decision to see some categories as a strategy to reach the overall goals of a TPD for OBL. For example, this study places confidence and motivation under the category of strategies because trying to make teachers feel confident and motivated to teach in an OBL environment, could help reaching TPD objectives. Hence, if one strives to make teachers feel confident to teach in an OBL environment, it could be seen as a strategy to improve teachers' willingness or disposition towards teaching in this, often new, digital environment. However, it has to be stressed that other researchers might have other opinions, which can probably strengthen our current knowledge on OBL and thus should and is welcomed by the authors of the current study.

The first main category at the base of SF 5 relates to teacher reflection (8/15) and is often associated with opportunities for self-assessment (4/15). Reflection and self-assessment can reduce anxiety and apprehension towards OBL, which can improve the result of the TPD (Wang et al., 2010). Some teachers need to be pulled out of their comfort zone, which might evoke some resistance. However, as indicated previously by Wang et al. (2010) this resistance can soon be outgrown by using reflective practices. In addition to being reflective, the studies reviewed suggest that teachers need to experience OBL (11/15) in an active way (4/15), and that they should create a useful product as an end within the TPD (6/15). Experiencing the possibilities and practical real-life applications of OBL can allow teachers to see the purpose of OBL (Stein et al., 2011). By drawing on these new experiences, teachers can learn new skills related to OBL that can be beneficial in their own practice (Hallas, 2008). The following main

category at the base of SF 5 is confidence and motivation. Teachers need to be confident to use OBL (7/15) and they need motivation to use it effectively (4/15). A participant in Wilson's (2012, p. 898) study on e-learning managers' perceptions towards TPD for e-learning elaborates on this: "As tutors gain in confidence they think more about how to use the technology to make it interesting for the students".

Teachers therefore need to be confident enough to design and implement an online or blended course in such a way that they can facilitate learning with their students (Nihuka & Voogt, 2012). Striving towards a confident feeling to teach in an online environment can thus be seen as a strategy to reach the objectives of a TPD for OBL: e.g. learning to teach online. The studies reviewed clearly indicate that TPD for OBL is preferably engaged in together with one's peers. This is generally about creating a community for teachers (4/15) in which the teachers know each other (2/15), and in which different kinds of peer support (13/15) are possible. Peer support is seen as a strategy for reaching collaborative engagement towards the stated objectives of TPD for OBL. Peer support is used here as the overall umbrella term that includes peer interactions and discussion (12/15), sharing one's work with one's peers (9/15), peer collaboration (7/15), peer feedback (3/15), and peer assessment (2/15). In their study on TPD for the design and delivery of e-courses, Nihuka and Voogt (2012, p. 238) explain why peer support (e.g. peer collaboration) is important: "All instructors pointed out that collaboration promoted confidence and created a favourable environment for course redesign, generated ideas on how to deal with students' email, how to organise course content and ideas about when to provide feedback to students". When TPD for OBL is seen as a collaborative effort in which teachers share their work, then teachers are able to comment on each other's work, learn from advice given, share their expertise and ideas, and act as critical friends to their colleagues (MacDonald & Campbell, 2012). The fifth synthesised finding leads to the following action recommendation: To better support teachers in their PD, a TPD for OBL should acknowledge specific strategies such as experiencing OBL hands-on. Figure 6 illustrates how the former categories lead to SF 5.

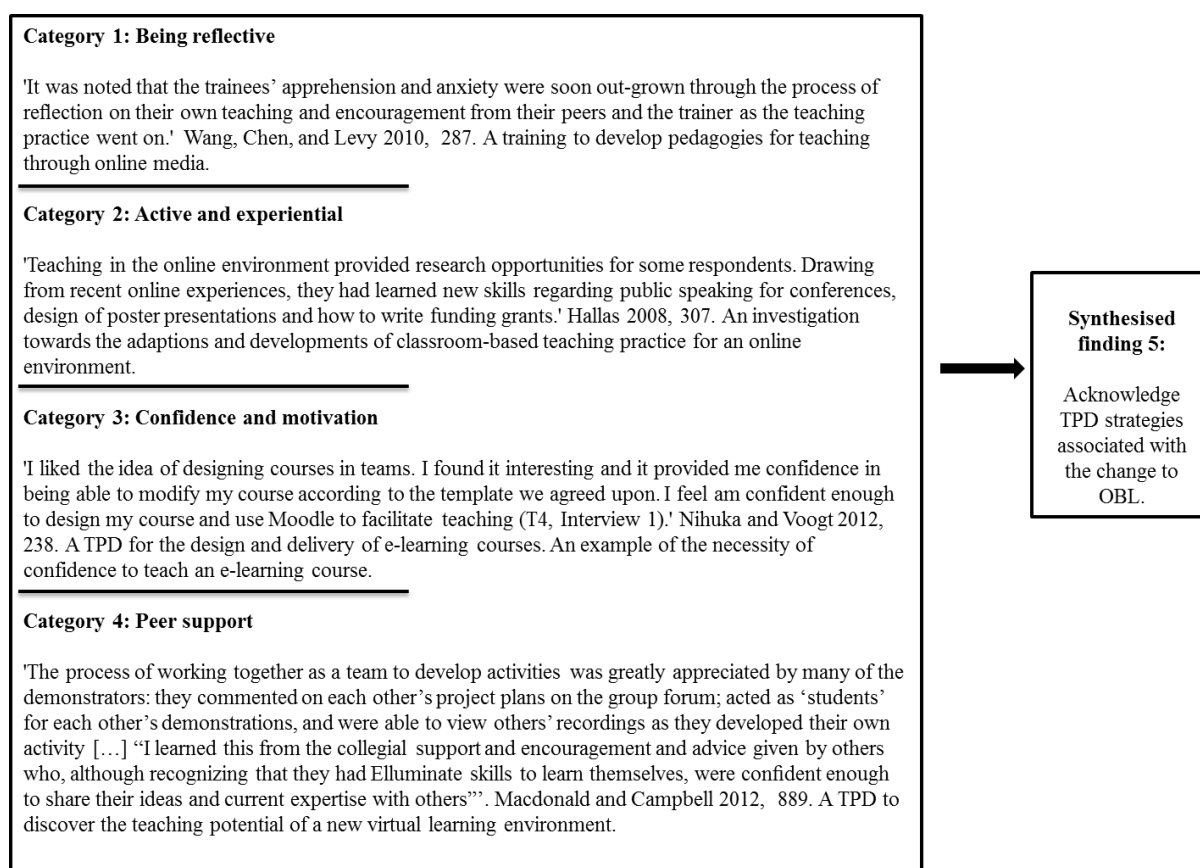


Figure 6: Synthesised finding 5

## Synthesised Finding 6: Disseminate knowledge, skills, and attitudes and evaluate the TPD

The final synthesised finding is that the studies reviewed suggest that it is important to evaluate the TPD for OBL strategy and to strive towards the dissemination of the new knowledge, skills, and attitudes within the teachers' own institutions. The first main category pertains to the process of dissemination (4/15). This enables teachers to cascade knowledge, skills, and/or attitudes, and possibly contribute in this way to their colleagues' learning and teaching (Gregory & Salmon, 2013). The second main category at the base of SF 6 relates to the need to evaluate the TPD for OBL (3/15). Evaluating TPD provides opportunities for changing it to better fit the local context and the needs of the teachers (Gregory & Salmon, 2013). This in turn can contribute to adding relevance and value to TPD for OBL, as Stein et al. (2011) argue. The final SF leads to the following action recommendation: To extend possibilities for knowledge sharing and tailor further TPD initiatives to existing contexts and needs, a TPD for

OBL should encourage the dissemination of knowledge, skills and attitudes about OBL, and perform a continuous evaluation of TPD processes. Figure 7 illustrates how these categories lead to SF 6 and supportive quotes are provided.

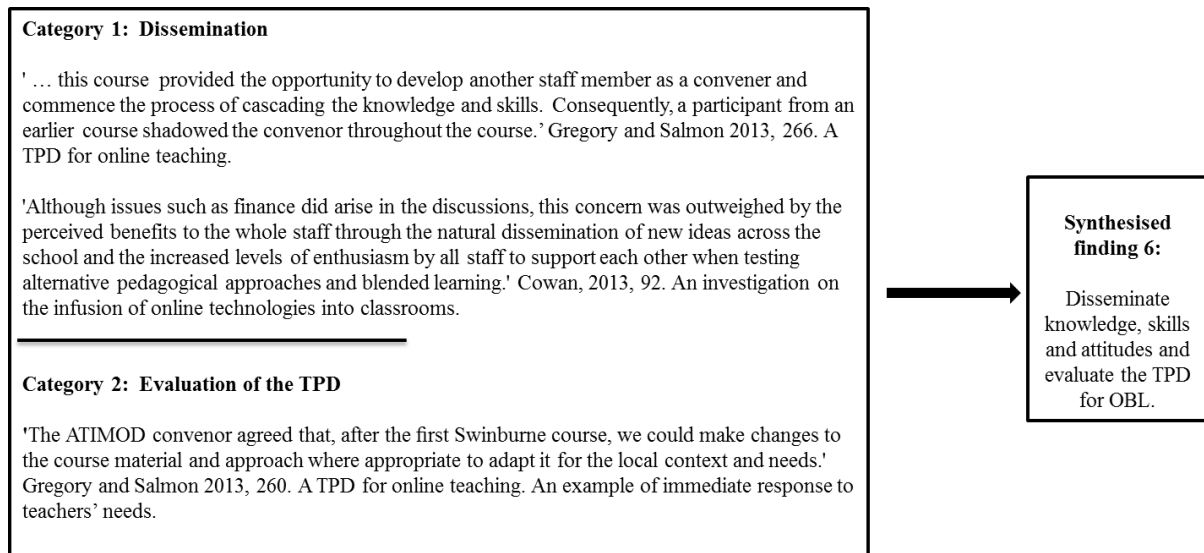


Figure 7: Synthesised finding 6

Table 3 presents an overview of the different categories per synthesised finding. It illustrates how the different categories relate to the different studies reviewed (indicated by the first author). It therefore indicates which paper addresses which category.

Table 3: Studies (first author) addressing the different categories and synthesised findings

SF	Category	Ching	Cowan	Comas-Quinn	Doering	Ernest	Gregory	Guasch	Hallas	Ham	MacDonald	Mackey	Nihuka	Stein	Wang	Wilson
1	TPD support/feedback	x	x	x	x	x	x	x	x				x	x	x	x
1	Intended process						x				x		x		x	
1	Duration		x	x	x	x	x	x	x	x		x	x			x
2	Financial constraints			x			x									
2	Instit. characteristics			x			x	x				x	x	x		x
2	Existing strategies						x									
2	Planning		x			x	x				x		x			
3	Rethinking roles		x					x		x		x		x	x	
3	Prof. identity/beliefs		x		x							x			x	
4	Goals & procedures	x	x	x	x	x	x	x	x	x	x		x	x	x	x
4	Relevance	x	x	x	x	x	x	x	x		x	x	x	x	x	x
5	Reflective			x	x	x	x	x	x		x	x			x	
5	Active/experiential			x		x	x	x	x		x	x	x	x	x	x
5	Confident/motivated		x	x	x							x	x		x	x
5	Peer support	x	x		x	x	x	x	x		x	x	x	x	x	x
6	Dissemination			x			x					x				x
6	Evaluation						x	x							x	

### Presenting a comprehensive framework on the important components of TPD for OBL

Most of the frameworks or models pertaining to TPD are not presented together with action recommendations, irrespective of whether or not they are related to OBL (e.g. Desimone, 2009; Lawless & Pellegrino, 2007). Lawless and Pellegrino (2007) present an evaluation scheme for technological professional development that has three critical dimensions, namely, the type of professional development, the unit of analysis, and the design and methods. The framework of the present paper differs in the way in which it incorporates action recommendations and in that it is not guided by a question of effectiveness. The studies reviewed for this paper were not selected based on the reported success or effectiveness. This is due to the fact that even when a certain study can conclude that a specific TPD for OBL was not effective (for example: student learning did not increase), it still might contain valuable information on specific TPD

for OBL components which were deemed important in that specific study. Those components, that are positively recognised and appreciated, form the base of the presented framework and action recommendations.

Furthermore, our framework discusses each single component with regard to its importance, as indicated by the teachers, trainers, or researchers. Therefore, the framework presented differs from other frameworks, models, and TPD meta-studies (e.g. Wayne, Yoon, Zhu, Cronen, & Garet, 2008) because it implements action recommendations into the framework, provides supportive quotations, and is based on unequivocal or credible evidence in keeping with the meta-aggregative approach. The six synthesised findings identified in the current review are represented as a framework in Figure 8, and can act as action recommendations. The framework does not represent a linear process or a TPD process, but rather provides an overview of important components of TPD for OBL. Some of the components are continuously present as a ‘concern’ (e.g. context) throughout the entire TPD process, but they appear as a single component in the framework. This does not mean that they should only be addressed once at a certain moment, but rather that attentiveness is demanded towards that certain component whenever it is appropriate. Therefore, on the basis of the current findings, the present study suggests that TPD for OBL is a complex process that is affected by different components that are interrelated with each other.

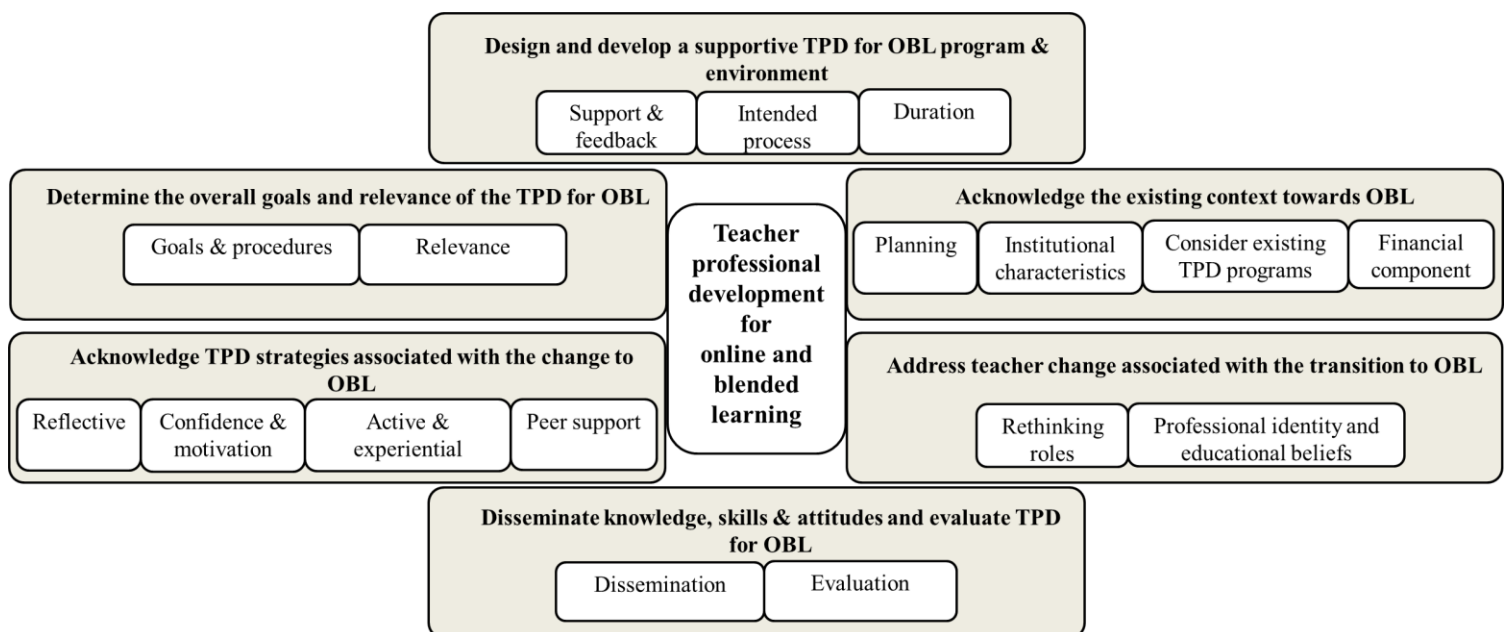


Figure 8: Comprehensive framework

## Discussion

The present study sought to identify important components of teacher professional development (TPD) that target online and blended learning (OBL), and to explain why they are considered important. A search in the ISI Web of Science database eventually led to the identification of 15 suitable peer-reviewed studies. The authors of this study acknowledge that using only one database may be seen as a limitation and could evoke bias. However, as the methodology section argued, the ISI Web of Science remains one of the leading high-impact and most recognised scientific databases. Furthermore, although this study only made use of one database, sufficient articles were identified for analysis. Future studies can integrate more databases in order to expand this study. The empirical data from 15 peer-reviewed studies were examined using a meta-aggregative approach (e.g. Hannes et al., 2013). This led to the construction of six synthesised findings (SF) that were subsequently presented in a comprehensive framework. In this section, the findings of this study are discussed in the light of the existing literature. It has to be stressed that between the SF there might be some overlap. It is always a challenging process when one tries to categorise findings from a systematic review, and some overlap between the categories is often still present. Hence, even though this paper aims to clearly present distinct categories and synthesised findings, there could well be some small resemblances between them.

The large amount of attention given to TPD is not surprising given its potential to support and maintain the quality of educational culture (Ehlers, 2009). The vast amount of research targeting TPD indicates that it can indeed affect many aspects of our current educational system (Adey, 2006). This is also true of online or blended approaches, and OBL often requires specific training (Salmon, 2011). Furthermore, OBL remains a complex process that requires considerable planning and implementation. Professional development requires time, and this time has to be well-structured and purposefully directed (Guskey, 2003). Therefore, programme developers and trainers should be attentive to the duration of their TPD (Adey, 2006), and to the workload required. Previous research indicates that teachers tend to favour a longer trajectory of professional development (Garet et al., 2001). Teacher trainers and programme developers of TPD for OBL should therefore give considerable attention to

duration (SF1) and planning (SF2). If teachers indicate a lack of time for professional development but also tend to prefer a longer TPD programme (Garet et al., 2001), then it becomes apparent that one needs to find a good balance when planning, developing, or participating in a TPD for OBL. Another emerging theme across the reviewed studies relates to the importance of acknowledging the existing context towards OBL (SF2). Acknowledging the broader context has been substantially discussed in the general TPD literature (e.g. Consuegra & Engels, 2016; van Veen et al., 2010). Acknowledging the existing context is essential if teachers are to be expected to successfully implement OBL in their practice. Guskey (2000) indicates that teachers may be faced with institutional barriers when it comes to implementing new knowledge, skills, attitudes, or ideas. An example of this is when the existing context may impede their professional identity development related to the change to OBL. It has to be stated that some institutional context factors are more structural in form, and that some are not easy to overcome.

Another result of the present review indicates that TPD for OBL needs to address teachers' and students' roles, together with the teachers' professional identities and educational beliefs (SF3). The importance of considering this professional identity of teachers making the change to OBL lies in the fact that the identity of the teacher is no longer tied to the physical classroom, but is rather being created in an online environment (Meloncon, 2007). This finding in itself, the importance of teacher identities, is already shown in other TPD literature (e.g. Beijaard, Meijer, & Verloop, 2004; Korthagen, 2001, 2004), and can also be related to the notion of professional vision by Sherin and Russ (2014). Teachers are often used to teaching, communicating, interacting, and interpreting in a real life environment. When all of this moves to an online environment, and is therefore mediated in a new way, teachers should definitely take time to reflect on this and to consider how it affects their role and identity. Therefore, teachers need to redefine themselves in this new environment (Meloncon, 2007), and institutions need to give them time, support, and the possibility of doing so (Redmond, 2011). The importance of considering this professional identity of teachers making the change to OBL lies in the fact that the identity of the teacher is no longer tied to the physical classroom, but is rather being created in an online environment (Meloncon, 2007). Furthermore, the relationship between TPD and the development of their professional identity and educational beliefs is clearly shown in other TPD literature (e.g. Beijaard, Meijer, & Verloop, 2004; Korthagen, 2001, 2004). Teachers are often used to teaching, communicating, interacting, and interpreting in a real life environment.



When all of this moves to an online environment, and is therefore mediated in a new way, teachers should definitely take time to reflect on this and to consider how it affects their role and identity. Therefore, teachers need to redefine themselves in this new environment (Meloncon, 2007), and institutions need to give them time, support, and the possibility of doing so (Redmond, 2011). However, it is not always easy to provide teachers with all the necessary time, support, infrastructure, and other elements needed for their professional development. Many institutions face great challenges in meeting the requirements for professional development, and it can therefore sometimes be more of a question of how teachers can professionalise themselves for OBL, using the current institutional means.

In addition to addressing professional identity, a focus on student learning is often an important characteristic of a TPD that targets OBL (SF4). The ultimate goal of more ‘general’ TPD is often seen as enhanced student learning (e.g. Anthony, Hunter, & Thompson, 2014; Desimone, 2009). The present study also indicates that making this link to student learning is an important feature of TPD that targets OBL. However, this result may reduce TPD to being a means to an end, namely, enhanced student outcomes. Research in which “the professional development of teachers is considered a justifiable end in itself (...) irrespective of whether or not it may be seen to lead to gains in relation to pupil learning” (Evans, 2014, p. 181) is just as valuable and important as any other research on this matter. Therefore, research on TPD for OBL should always clearly describe the desired results of certain professional development programmes and why these results are valuable. Without questioning the importance of student responses to TPD, a TPD that focuses solely on, for example, teachers’ self-esteem or motivation can be just as valuable.

The last two synthesised findings relate to professional development strategies (SF5) and evaluation and dissemination (SF6). One aspect of the fifth SF is reflection. Teachers who professionalise themselves for OBL should reflect – and keep on reflecting – on their journey of becoming or being an online teacher. If that reflection is lacking, or limited to the very minimum, then the internal routines of “online teaching, the roles they are expected to take and the methods they are to use, their ability to cope with that is guaranteed and with it the need to grow as an online teacher fades” (Baran et al., 2011, p. 432). Hence, including a reflective approach may help to identify or address teachers’ professional development needs. Moreover,

this review study also suggests that evaluating the TPD could also indicate whether or not the programme was positively experienced. In addition to indicating how teachers experienced the programme, evaluation is also a much-used strategy for reforming professional development approaches and gaining a deeper understanding of the complex process of professional development and its essential features (Guskey, 2000).

After discussing these various synthesised findings and comparing them with the existing literature, one may wonder what makes TPD for OBL different from a more generalised TPD. It should be noted here that there are actually many resemblances. This is hardly surprisingly given that we, as authors, expected to find similar components to the ones that had already been identified by previous general TPD research (e.g. Consuegra & Engels, 2016; Desimone, 2009; van Veen et al., 2010). However, on the basis of the existing literature and the results of this study, we can tentatively state that a possible difference can be found at the personal level of the teacher, particularly the teachers' professional identity and role. We acknowledge in this respect the Clark and Kozma debate (Becker, 2010) held in the early 90's on the possible influence of media on learning and whether or not the choice of delivery mode affects learning. Thus, what follows is presented as a possible approach towards examining differences between general TPD and TPD for OBL. For example, many general TPD programmes focus on didactics and how to teach that content. This is not different in a TPD that targets OBL, but it seems to be that in TPD for OBL there is a stronger emphasis on how to teach and how this relates to teachers' professional identity.

Thus, the tentative claim made here is that the attention given towards how content is being taught and how this relates to teachers' professional identity can receive a more pivotal role in TPD for OBL than in other TPD programmes. This due to the importance of the change in the psychological self when one transitions to OBL (Baran et al., 2011), a change that is often forgotten in other TPD approaches (Wang et al., 2010). The change in the teacher's role and an examination of how teachers perceive themselves in their online teaching role appears to be one of the most important and challenging aspects of transitioning to online teaching (Tschida et al., 2016). This can also be seen in the results of this study that found that the teachers' professional identities and roles form an important component of TPD for OBL. However, this is definitely not only true of TPD for OBL. Many studies have already demonstrated the

importance of teachers' professional identities and professional-selves (e.g. Kelchtermans, 2009). Yet, when one examines the large meta-studies that consider the essential elements of TPD (e.g. Desimone, 2009; van Veen et al., 2010), teachers' professional identities and roles are not always explicitly mentioned as a key-component, which is different in this study. Therefore, supported by the previous literature (e.g. Baran et al., 2011; Tschida et al., 2016) and the results of this study, we would like to advocate that teachers' professional identities and their teaching roles form an important key-component of TPD for OBL. This is currently different from other existing general TPD approaches (Consuegra & Engels, 2016; Desimone, 2009; van Veen et al., 2010), which may acknowledge teachers' professional identities and their roles, but do not explicitly present them as an essential key-feature in their approaches and models.

### **Limitations of the study and recommendations for future research**

This review examined fifteen peer-reviewed studies using a meta-aggregative approach (Hannes et al., 2013). This led to six synthesised findings that can act as concrete action recommendations. Making certain methodological choices inevitably leads to limitations in the research process (Hannes et al., 2013). To illustrate this, many articles were excluded due to the interchangeable use of online TPD and TPD *for* OBL. This limited the studies that were considered appropriate for further analysis (n=15). This could be seen as a deficient number of studies, but recent educational research shows that it can be a sufficient number for a systematic review (Gast, Schildkamp, & van der Veen, 2017; Hwang, Bartlett, Greben, & Hand, 2017; Kurilovas, Dvareckienė, & Jevsikova 2016; Spolaôr & Vavassori Benitti, 2017) using a meta-aggregative approach (e.g. Tondeur et al., 2017). Furthermore, "The meta-aggregative approach can incorporate any number of studies, and there is no 'ideal' number nor cut-off" (Lockwood et al., 2015, p. 183). Moreover, the authors of the present review noticed that 'online TPD' is often used interchangeably with 'TPD for online teaching'. It was often the case that a title or abstract indicated the latter term, but actually addressed the former. In addition, the authors chose to not select according to the educational level. It is important to stress that specific elements exist across educational levels and this presents an interesting topic for further research. However, it was not the aim of the present study to target existing differences across various educational levels, but rather to present more general synthesised findings. Additionally, the authors also did not use reported effectiveness as a selection criteria

for the studies used in this review. This would be an interesting topic for further research to see if the same components could be derived. In this study effectiveness was approached by the idea of whether or not the participants or researchers appreciated certain traits of the TPD for OBL. This is a completely different approach than when one targets effectiveness from enhanced student learning. This too is an interesting topic for further research to examine the differences between perceived effectiveness of teachers and students.

The present study formulated six different synthesised findings that can serve as action recommendations towards policy and practice. The methodology followed meant that the authors did not integrate a critical perspective in the results section. With a meta-aggregative approach, the researchers take the literal descriptions from the studies reviewed. In addition, the selection criteria used for this review meant that many articles were excluded. Therefore, it is possible that other important components are yet to be identified. However, the use of a meta-aggregative approach in this systematic review enabled us to distil recurring patterns across different studies and to formulate concrete action recommendations and guidelines. Furthermore, a systematic review offers the possibility of facilitating a deepened understanding of a certain topic and could support the development of theory (Hammersley, 2001). In this case, the added value of this study can be found in its presentation of a comprehensive overview of important TPD components for OBL which are based on strong qualitative evidence. This might not only lead to a better understanding of TPD for OBL, but it can also illuminate how TPD for OBL can differ from more generalised TPD approaches.

While this study already offers an indication of the possible differences between TPD for OBL and a generalised TPD, further research could identify more components for a TPD that targets OBL. Furthermore, “as a finding is extracted, a level of ‘plausibility’ is allocated based on the reviewers’ assessment of the degree of fit, or congruency between the data and the accompanying illustration ”(Lockwood et al., 2015, p. 183). To illustrate this, this study’s review team opted to include ‘existing strategies’ as a main category, although this was only supported by one reviewed study. The meta-aggregative approach is not only concerned with how many other studies report the same finding, but it is also concerned with whether or not unequivocal or credible evidence is provided and if the finding can be aggregated into action recommendations. Therefore, future research that uses a meta-aggregation should motivate

why certain choices were made, particularly when only a fewer number of studies mention a certain category or finding.

The authors of the present review acknowledge their own role, previous experiences, and the context in which this study took place. This research was conducted in a West-European context and the identifications made by the authors could be perceived differently in another context. As indicated in the results of this study, other approaches and views towards the identification of the presented categories and synthesised findings are most welcome. The conclusions drawn in the current study are the result of the contextual environment and backgrounds of the authors of this study. Hence, hereby acknowledging that other views towards our categories and conclusions are not only to be expected but even more to be welcomed. This could only strengthen the current knowledge and contribute to the debate on TPD for OBL. In this respect Hannes and Lockwood (2011, p. 1639) state that there will be “different definitions of what constitutes usable findings [...] and that readers ] should be aware of the need to consider the evidence in light of their particular context and how it might apply through their subjective lens”.

## **Conclusions**

This review sought to identify important components of TPD for OBL, and to understand why these are considered to be important. Using a meta-aggregative approach (Hannes et al., 2013), six synthesised findings (SF) were identified. These include the design and development of a supportive TPD for OBL program and environment; the acknowledgement of the existing context towards OBL; the addressing of teacher change associated with the transition to OBL; the determination of the overall goals and relevance of TPD for OBL; the acknowledgement of teacher professional development strategies associated with the change to OBL; the evaluation of the TPD and the dissemination of the knowledge, skills, and attitudes. While each SF identifies a single key component of TPD for OBL (e.g. context and teachers), they all interrelate with one another. Therefore, the key components identified should not be seen as separate to one another, but always in relation to each other. This paper does not aim to present its results as golden standards that guarantee success or as rigid design guidelines. What the paper does aim is that the framework, the synthesised findings and the action recommendations

intent to add to the existing knowledge of TPD for OBL. Next to that, it is the interpretation of these results that might inform inter alia the design of TPD programmes. Albeit without delineating a specific blueprint, sequence or process that should be followed. Thus, it is the interpretation of the results presented in this paper that can inform research, policy and practice in the process of decision making pertaining to the subject of TPD for OBL. To illustrate, the comprehensive framework presented in this review can act as a starting point for professional development programme designers or teacher trainers as it can inform them on the important TPD components for OBL as identified by this study. However, the ones who use the framework must keep in mind that the function of the framework is to inform and not to dictate what should be done. In essence it is the responsibility of the one who uses the framework to interpret it and weigh it in relation to the specific context. Herein lies the strength and merit of findings stemming from a meta-aggregative approach, in that these findings demand and elicit a process of interpretation and contextualisation by the reader or end user.

The proposed SF and the comprehensive framework have several strengths and they address a gap in the recent existing literature, which is discussed in the introduction. Firstly, they specifically focus on TPD that targets OBL. Secondly, they bring all these components together in a comprehensive visual framework. Thirdly, the focus on qualitative data that are drawn from research papers with a strong methodological quality, and the use of supportive quotations, means that the present review provides insight into why certain components are considered important. Fourthly and finally, the considerable resemblance to more generalised TPD components means that the comprehensive framework may also be valuable outside the context of OBL.

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**Additional table** Main characteristics of the studies reviewed

Nr.	First author	Year	Methodology/ Paradigm	Data sources	Data analysis	N =	Geographical location	Educational level
1.	Ching	2014	Grounded theory	Teachers' writings	Discourse analysis	69 IST	USA	Elementary
2.	Comas-Quinn	2011	NS	Participant observation, Surveys & Interviews	Content analysis Recursive abstraction	20 IST	UK	Secondary University
3.	Cowan	2013	Hermeneutic phenomenology	Observations, Photographs, Interviews & Posts	Thematic analysis	3 IST	UK	Secondary
4.	Doering	2009	Interpretive research	Self-reports & Interviews	Constant comparative method	8 IST	USA	Secondary
5.	Ernest	2012	Case study Case study	TPACK- ratings Teachers' writings & Moodle logs	Constant comparative method	20 IST	UK SP	University
6.	Gregory	2013	Case study	Authors' own experiences	NS	2 IST	AUS	University
7.	Guasch	2010	Socio- constructivism Case study	Recordings of workshops	Thematic analysis Content analysis	12 IST	SP	University
8.	Hallas	2008	Case study	Surveys & Interviews	Content analysis	31 IST	AUS	University
9.	Ham	2005	NS	Self-reflective journals, Interviews & Questionnaires	Action research Content Analysis	2 IST	AUS	Higher education
10.	MacDonald	2012	Case study	Surveys	Iterative reading	NS	UK	University

11.	Mackey	2011	Social constructivism Connectivism Case study	Interviews & Online activity records	Content analysis	15 IST	AUS	Primary Secondary
12.	Nihuka	2012	Case study	Interviews	Deductive and inductive analysis Thematic analysis	12 IST	TN	University
13.	Stein	2011	Phenomeno- graphic	Surveys (S) & Interviews (I)	S: 114 I:20 IST	AUS		Tertiary
14.	Wang	2010	NS	Surveys, Journals, Self-reflection reports, Monitoring reports, Video recordings & Forum posts	Thematic analysis	8 IST	AUS	University
15.	Wilson	2012	Grounded theory	Interviews	Open and axial coding and concept identification	13 ELM	AUS	Vocational institutes

Note. Abbreviations: IST: In-service teachers; NS: Not specified; ELM: E-learning managers; USA: United States of America; UK: United Kingdom; SP: Spain; AUS: Australia (also including New Zealand); TN: Tanzania.

Figure 9. Additional information on the studies reviewed.





## Chapter two: Case-study: Digital Didactics<sup>2</sup>

### Abstract

Because more and more institutions are offering their courses in an online delivery mode, many teachers are nowadays faced with a specific need to be trained in online teaching. This study examines how an online teacher professional development for online teaching is experienced by the coaches and the participants. The data for the paper comes from a focus group meeting with the coaches and in-depth interviews with the participants. Furthermore, the training programme is described by following a conceptual schema for the evaluation of technology professional development programmes. The results indicate that the experiences of the coaches align to great degree with the ones reported by the participants. One of the key findings is that the programme led the participants to undertake thorough pedagogical consideration of how and why online teaching can be beneficial. Furthermore, the results suggest that offering professional development online might evoke positive and negative experiences with the online environment.

*Keywords: Distance education, Online and blended learning, Professional development, Professional development experiences*

### Introduction

The increase in the number of online (and blended) courses offered (Means, Toyama, Murphy, & Baki, 2013) has led to an increase in research that targets teacher professional development (TPD) for online teaching (OT) (Salmon, 2011). Various aspects of learning to teach online have been targeted, and many useful contributions have been made to both the scientific and practical educational fields (e.g. Doering, Veletsianos, Scharber, & Miller, 2009; Wolf, 2006).

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<sup>2</sup> Adapted from: Philipsen, B., Tondeur, J., Pynoo, B., & Zhu, C. Online professional development for online teaching: Teach what you preach. Submitted for review with *Technology Pedagogy & Education*

In addition, research pertaining to online teacher professional development (OTPD) has also received considerable attention (e.g. Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009; Prestridge, 2010, 2016), just as technology professional development for teachers (Lawless & Pellegrino, 2007). OTPD can encourage the development of online interaction and participation by giving teachers sufficient confidence in an online environment (Prestridge, 2010). OTPD differs from professional development *for* online teaching in that OTPD usually merely specifies the PD's delivery mode, while TPD for OT specifies the subject of the TPD programme, which will be further discussed in the theoretical background.

Not all studies that report on OTPD examine the teachers' experiences on a long-term basis. In this respect, Guskey (2002) argues that many PD evaluations are too brief and neglect long-term results. Next to that, the current literature highlights the profitability of examining long-term teachers' experiences (Ha, Baldwin, & Nehm, 2015). Therefore, this study focuses *inter alia* on the participants' long-term experiences of OTPD for online teaching, and compares these experiences with the coaches'.

## **Theoretical background**

### **OTPD for online teaching**

The increase in online courses has led to more research on TPD that targets online teaching (Salmon, 2011), and on OTPD (Dede et al., 2009). If one compares these two research approaches, one sees that the PD's subject of TPD for teaching online is learning to teach online. By contrast, with OTPD the subject is not necessarily online teaching. OTPD only specifies the delivery mode of the PD, which is often an online environment. Therefore, the difference between these two approaches is that TPD *for* online teaching specifies the subject of the PD, while OTPD specifies the PD's delivery mode. Table one shows the different permutations of some professional development modes and topics. The highlighted part shows the focus of this manuscript. It must be said that Table one is a very narrow and limited overview that does not represent the vast richness of teacher professional development modes, but that it can help to pinpoint the specific focus of this study.

Table 1: Different permutations of some professional development modes and topics

<b>PD mode</b>	<i>Online</i>	<i>Face-to-face</i>
<b>PD topic</b>		
<i>Online teaching</i>	Online teacher professional development for online teaching	Face-to-face teacher professional development for online teaching
<i>Face-to-face teaching</i>	Online teacher professional development for face-to-face teaching	Face-to-face teacher professional development for face-to-face teaching

In examining OTPD studies, whether related to online teaching or not, one sees that teacher learning and teacher reflection can be supported by using online technologies (Dede et al., 2009; Prestridge, 2010, 2016). For example, tools for reflective actions on online teaching practices can contribute to teachers' learning and to their acceptance of teaching with technology (van der Meij, Coenders, & McKenney, 2017). Moreover, Prestridge (2010) argues that online ICT (information and communication technologies) professional development can highlight those elements that contribute to collegial and critical dialogue in relation to teacher change and their experiences within the PD. Hence, research on OTPD for online teaching and technology use may offer valuable information about how teachers experience OTPD. In their agenda for OTPD, Dede et al. (2009) argue that research needs to examine, among other things, the participants' (long-term) experiences in the OTPD, and collaboration between practitioners or designers and researchers in order to co-create training programmes that are built on previous research and experiences. These suggestions by Dede et al. (2009) were integrated in this study design (examining long-term experiences) and OTPD design (a co-constructed OTPD built on previous research).

### **Professional development and professional learning**

Although more and more professional development programmes are offered online, little is known of how professional learning occurs online and which elements of the online learning environment either might hinder or support it (Teräs & Kartoglu, 2017). It has to be pointed

out that professional development and professional learning can be interpreted differently, and this strongly depends on the context wherein those terms are used. Evans (2014) argues that professional learning and professional development are sometimes too strictly interpreted as in that they ultimately always should lead to increased student learning. Evans (2014) states that teacher learning/change in itself is a justifiable ‘end’ of professional learning or professional development. This highlights the importance of clearly describing how both professional learning and professional development are interpreted and contemplated.

Professional learning and professional development are often interchangeably used (Evans, 2014) which might hinder making a clear distinction between them. This paper presents the following possible definitions for professional learning and professional development, which are based on the work of Evans (2014), Knapp (2003), and Teräs and Kartoglu (2017). Professional development is seen as the behavioural, cognitive, attitudinal or social activities that could enhance peoples’ professional learning. Professional learning constitutes the conscious or unconscious phenomenon of the continuous internal processes that change previously held knowledge, attitudes and competences related to peoples’ professional practice.

Professional learning ultimately is always the responsibility of that specific person, and it cannot ever be completely controlled or directed (Webster-Wright, 2010). It is however possible that professional learning is facilitated and supported (Webster-Wright, 2010). It has to be stressed that in this paper it is not intended to examine whether or not professional learning occurred, but when one writes about professional development and learning, one should specify how both terms are conceived.

## **Evaluating OTPD**

Lawless and Pellegrino (2007) offer in their paper a conceptual schema for the evaluative process of technology professional development, which by extent also could be applied to online teaching. They suggest that evaluating technology professional development programmes entails knowing the nature of the professional development and how it was *inter alia* delivered, how long it lasted and what the unit of analysis was. Next to that, during a

professional development teachers should, according to Salmon (2011), acquire 5 characteristics that support them in meaning-making online teaching rather than merely transmitting content. Online teachers should develop an understanding of the online environment used; They should develop the technical skills necessary to operate the software; They need to be trained in online communication skills; They should be content experts to support constructive learning and finally; They should strive towards a positive attitude, such as confidence and positivity, as regards their role as online teacher (Salmon, 2011). The literature review of Lawless and Pellegrino (2007) showed that irrespective of a professional development's focus it is often not known what teachers learn from professional development programmes. When research on professional development targets the integration of technology into education the precise focus of the professional development activities should be made clear (Lawless & Pellegrino, 2007). To examine the training programme presented in this study we use the schema from Lawless and Pellegrino (2007). Figure one is an adaptation from their evaluation schema.

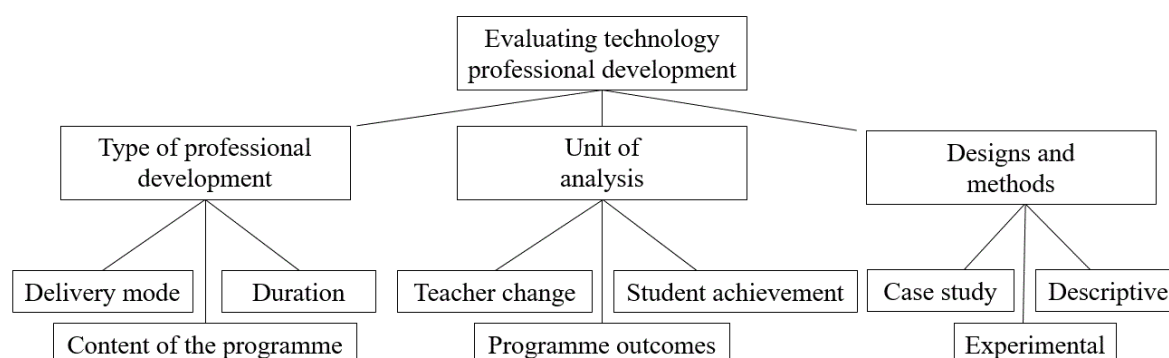


Figure 1: Framework to evaluate. Adaptation from Lawless and Pellegrino (2007)

As can be seen in Figure one, Lawless and Pellegrino (2007) argue that evaluating technology professional development consists of three critical dimensions. For a more detailed description on their schema, this study refers to the work of Lawless and Pellegrino (2007) on how technology professional development programmes could be evaluated. However, the authors of the study presented not only used the schema to analyse the presented professional development programme, but also used the results of this study to see whether or not suggestions could be made to improve the schema of Lawless and Pellegrino (2007). Furthermore, only using the schema would only provide a concise representation of the

professional development. Hence, the five characteristics of online teachers as suggested by Salmon (2011) are also used as a lens to look at the coaches' and the participants' experiences.

### **Context of the study: The online training programme**

The Digital Didactics (DD) programme was originated with the Belgian Network for Open and Distance Learning, funded by the European Social Fund and co-constructed by the authors of the present study. The online professional development programme has a linear trajectory. It consists of seven online modules and is available in English, French and Dutch at [www.digitaledidactiek.be](http://www.digitaledidactiek.be). The seven modules are: Basis, Design, Development, Implementation and follow-up, Cooperative learning, E-coaching, and finally Concerns. The trajectory presented in this study was free of charge and all the participants received online coaching in small groups. The traits of the programme will be discussed more in detail later in this paper, following the framework of Lawless and Pellegrino (2007).

Four online coaches worked on a voluntary basis and each of them started with a group of maximum 10 participants. The coaching activities entailed mainly presenting the content, providing suggestions on the participants' tasks and by keeping in regular contact with them to follow their progress. Their contact with the participants was solely online and was either synchronous (e.g. chat or Skype) or asynchronous (e.g. forum or mail). The coaches were not specifically trained for this programme. They were ought to have sufficient experience in coaching and mentoring activities due to their professional activities. The coaching focused on online teaching content, reflection on online teaching and its didactical possibilities, and how online technologies can be integrated in teaching. It has to be pointed out that this study does not examine whether or not the coaches had the same effect or end result with their group. Table two presents the main characteristics of the four coaches. The names have been adjusted to respect their privacy.

Table 2: Main characteristics of the four coaches.

<b>Description of the four coaches of the Digital Didactics programme.</b>			
Coach	Gender	Age	Professional occupancy and educational level.

1	Miranda	F	36	Educational advisor technology enhanced learning and usability design. Higher education level.
2	Iris	F	46	Didactical advisor and project coordinator e-learning. Vocational and adult education level.
3	Maria	F	49	Manager business support, retail & ICT. Expert professional development. Vocational and adult education level.
4	Gaby	F	34	Project leader new learning management systems. Higher education level.

In order to illustrate the look and feel of the DD website, this paper provides a brief overview of how the website and the first module were constructed (all the other modules were developed in a similar way). The introduction page shown in Figure two presents the reasoning behind online teaching or e-learning, and to a smaller extent also blended learning. It offers the readers, particularly those who are less acquainted with e-learning, a rationale for using e-learning, presenting both its advantages and some practical tips. Readers can select their preferred language, and can easily switch to the module of their choice. When somebody opens a module, an overview of the module's online content appears. Each online module has a section that addresses theory and includes real-life cases, exercises with immediate online feedback and, finally, an in-depth section with more scientific background articles on the particular content. Figure three, four and five show some examples of the websites' look and feel.

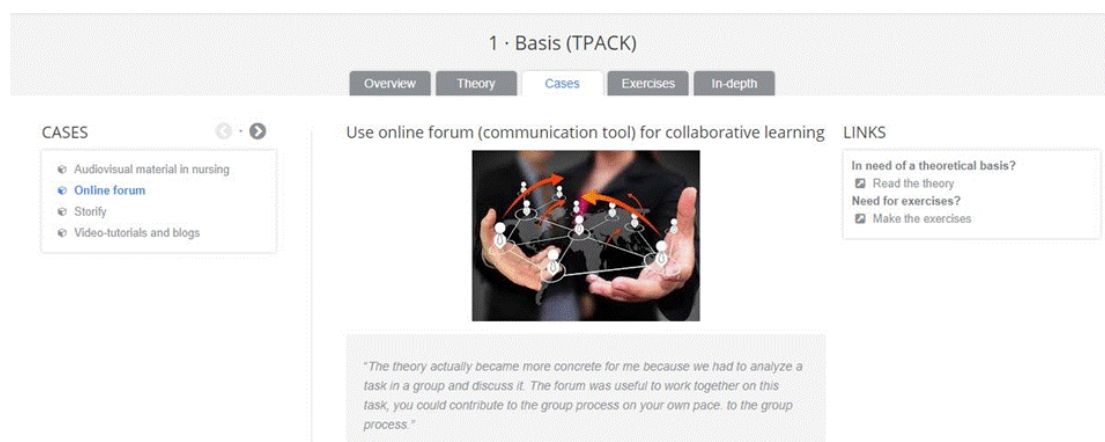


Figure 1: Look and feel of the DD website



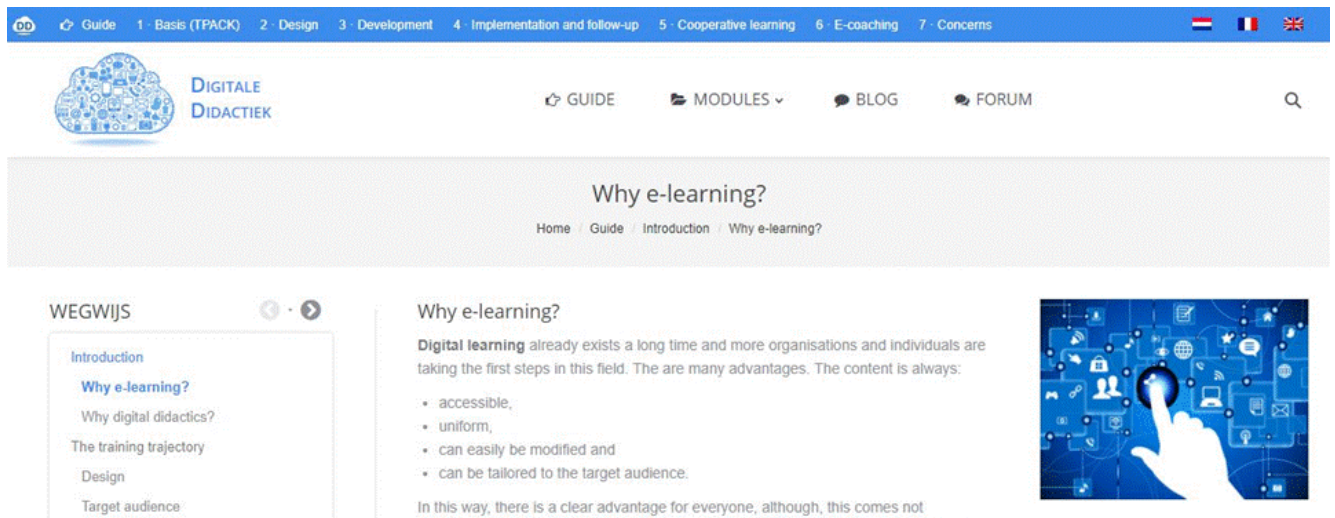


Figure 2: Look and feel of the DD website

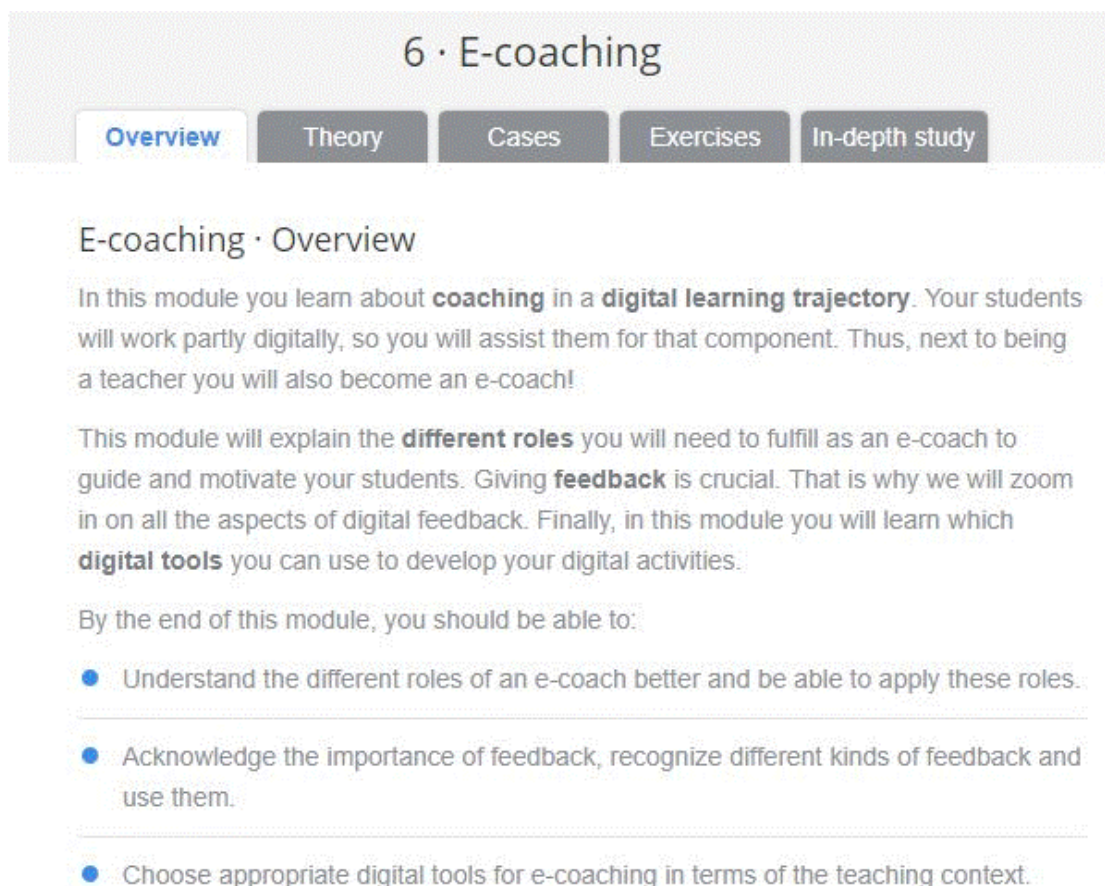


Figure 3: Look and feel of the DD website

## **The aim of the Digital Didacts programme and the study presented**

The main focus of the DD programme is to immerse the participants in didactical reasoning and reflection on online teaching, and to offer them some initial experiences with digital didactics. The aim of this study, which reports on the DD programme, is threefold namely: a) describing the OTPD programme using the schema of Lawless and Pellegrino (2007), b) examining possible differences between the coaches' and participants' experiences with the programme and examining whether or not these adhere to the characteristics as proposed by Salmon (2011), and c) whether or not online features of the OTPD affected the reported experiences.

## **Methodology**

The data for the presented study were gathered in two ways. There was one focus group meeting with the coaches at the end of the programme to capture their experiences. Next to that, three participants were selected for an in-depth semi-structured interview eight months after the programme ended to examine their long-term experiences. The guideline of the semi-structured interview is added at the end of this chapter. It has to be pointed out that these were non-strict guidelines and that every interview evolved in its own specific way. We mean by this that every interview was adjusted hands-on according to the participant's response.

## **Data analysis**

All the transcripts were imported into Nvivo10 and were analysed using an inductive approach, without predetermined categories (Patton, 2015). The coaches' experiences and the participants' long-term experiences were analysed using a thematic analysis (Braun & Clarke, 2006) that was grounded in an interpretive paradigm. Using this paradigm requires one to go beyond mere description (Patton, 2015), and although thematic analysis is widespread and frequently used, it often remains poorly defined and under-acknowledged (Boyatzis, 1998, Roulston, 2001). A thematic analysis offers a clear method for identifying, analysing and

reporting themes or patterns in one's dataset (Braun & Clarke, 2006). The process of conducting a thematic analysis has been described in various ways (e.g. Braun & Clarke, 2006; Howitt, 2010), but the central process generally has three main steps, namely, transcribing, coding and analysing the data. The coding process for both the coaches and the participants' experiences consisted of an open coding (Miles & Huberman, 1994) in which textual data was coded in a very specific way. This open coding process was followed by an axial coding (Miles & Huberman, 1994; Mortelmans, 2013) that grouped related smaller codes into larger categories. Themes were derived from these categories during the interpretative analytic procedure.

## **The participants**

The participants in the present study are on the one hand the four coaches, who were shortly presented in section 2 of this paper. On the other hand there is the examination of the long-term experiences of three participants. Forty participants started with the programme. However, only twenty finished it. The three main reasons that could be identified that contributed to this loss were firstly that the programme was free of charge, secondly that most participants added the programme to their current job and finally that the programme was quite intense as indicated by Maria, one of the coaches: *"I just think that it is quite an intensive programme and that we lost some participants because of that"*. It has to be pointed out that the authors did not thoroughly further examine this, as it is not in the scope of this paper. Nevertheless, in the focus group of the coaches there were many references to participants dropping out and from those references the three main recurring ones were chosen.

Three participants volunteered to participate eight months after the programme ended to examine their experiences. These participants were not only selected based on the fact that they volunteered, but also because they represent different groups within the sample of participants who finished the programme, namely teachers and didactical advisors/experts; without the attempt of generalising the results – of these three participants – across the whole group of participants. The sections that will target the experiences of these three participants – whose names have been changed to respect their privacy – aim to shed a detailed light on their experiences. Although three participants could be deemed as a small case, small "case studies

can provide reliable indications for the directions in which future research can go” (Boddy, 2016, p.2).

**Jill.** Jill (aged 43) is a didactical expert and supports numerous projects related to the development and implementation of didactics in online adult education courses. She works in a vocational institute which has a main function to help unemployed adults find a job. Jill decided to participate in the DD programme with several of her colleagues due to the increased number of courses being taught via distance education. She has previous experience in adult education, but is not currently active as a teacher.

**Henri.** Henri (aged 39) is a colleague of Jill, but is responsible for another geographical area. He also participates in a panel that selects new colleagues and guides colleagues who struggle with adapting to online education. He is therefore closely involved in the redesign processes pertaining to online teaching. Like Jill, Henri has previous experience in adult education, but he now devotes his time to his job as a didactical expert/advisor.

**Johanna.** Johanna (aged 39) is a higher education lecturer that mainly educates pre-service teachers. She lectures on pedagogical sciences and didactical subjects. In addition, she is the main internship counsellor for the whole institution. Because the higher education institution is intending to offer more courses in an online – or blended – format, Johanna decided to participate in the online DD programme.

## Results

In this section the results will be presented as followed: first, the programme is evaluated according to Lawless and Pellegrino’s (2007) schema. Second, the overall experiences of the coaches are presented, which are followed by third, the long-term experiences of three participants. Fourth, a comparison is made between the coaches and the participants, and recurring themes are constructed. Fifth and final, the constructed recurring themes are compared to the five characteristics of Salmon (2011). It has to be stressed that the results are

not meant as generalisable statements, but to shed light on the experiences of the OTPD presented.

### **Evaluating the programme following Lawless and Pellegrino (2007)**

The description of the schema is already covered in this paper's theoretical background, thus in what follows is the DD programme immediately presented according to the three critical dimensions mentioned. The first one is the type of professional development (Lawless & Pellegrino, 2007). The programme was delivered in an online mediated way with two face-to-face moments, namely a kick-off and a kick-down moment. Those face-to-face moments were destined as informal meeting moments, less related to the content presented in the programme. The content of the programme is mainly targeting the theory behind online teaching and the didactical possibilities of it. Thus, the main aims of the DD programme are skill development (e.g. practical exercises offered by the coaches such as the creation of an online learning module that can be used in the participants' own practice), knowledge building (e.g. the theory behind the programme such as the meaning of TPACK – Technological Pedagogical and Content Knowledge – and) and pedagogical and didactical reasoning (e.g. case studies and exercises on how to become an online coach who knows how to give feedback in an online environment). The duration of the programme was reasonably extensive with 5 months (from March 2015 to June 2015).

The second critical dimension is the unit of analysis (Lawless & Pellegrino, 2007). On this dimension the programme is rather difficult to categorise. There were no student results integrated in this study, nor was the effectiveness examined as this would require a more suitable pre- and post-test design. The unit of analysis were the specific experiences from the coaches and the participants. Hence, for this paper it is opted to use the more appropriate description of 'programme experiences' as the unit of analysis.

As a third and final critical dimension there is the part of designs and methods (Lawless & Pellegrino, 2007). The study presented adheres to both a descriptive and a case study design. Descriptive by reason of the fact that the paper mainly aims to describe the experiences of both the coaches and the participants, without the objective to further examine the effectiveness of

the programme. Additionally, the presented study also adheres to a comparative case study (Lawless & Pellegrino, 2007) due to the earlier mentioned comparison between the experiences of the coaches and participants. Figure six shows the visual representation of the DD programme integrated in the schema from Lawless and Pellegrino (2007) where the specifications of the DD programme presented are highlighted.

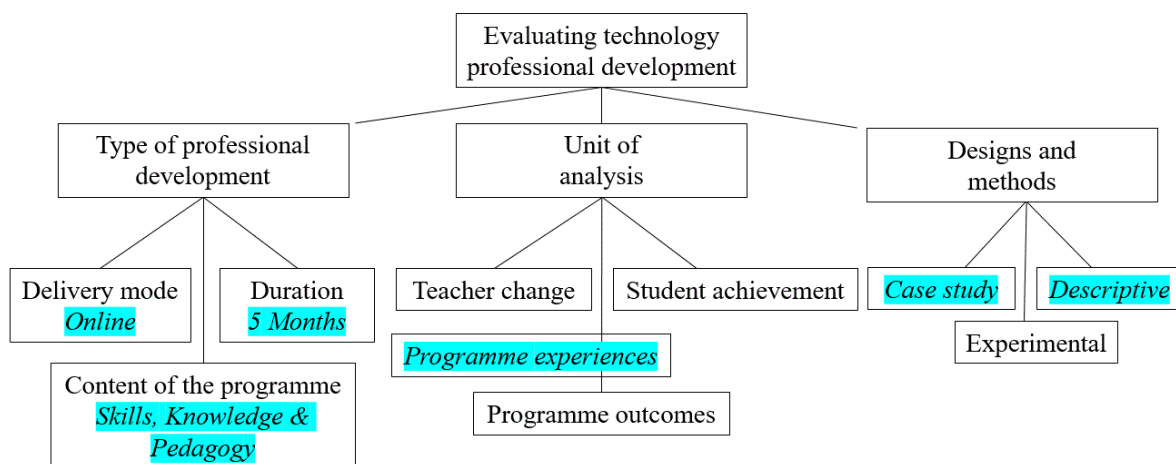


Figure 4: Evaluating the DD programme according to Lawless and Pellegrino's (2007) scheme.

### The coaches' experiences with the Digital Didactics programme

A first experience by the coaches is that they mainly see themselves as a motivator. When the coaches are asked what would have happened if the coaching was not offered, Miranda argues that even more participants would have dropped out:

I think a lot more people would have stopped with the programme. That is also the feedback we get from them [the participants]. When they [the participants] are having troubles, I can try to motivate them and I think that this kind of positive pressure can certainly help them to get back on track.

The coaches also indicate that 'having troubles' or 'being less motivated' was not a phenomenon that was unique to the participants. All coaches indicated that on some point their level and quality of coaching was not as it should be. This was mainly because they also added

the coaching activities to their current jobs and when there was a lot of work to be done for their initial jobs, this sometimes restricted their coaching within the DD programme. Maria states: “I have to admit that my own coaching was not always as it should be, mainly at the end of the programme when the exams started in our institution”. They also noted this with the participants. When the participants’ professional calendar got more busy, they became less active in the DD programme.

Most of the coaches indicated that they preferred synchronous contact moments, although that they did not all agree. The main key results here is that it mostly depends on how the coaches were used to work in their own institution and what the reason of the contact moment was. Iris stated:

I think that sometimes I missed synchronous contact moments... Mainly for interpretation. I like it a lot more that I can ask in real-time ‘what do you mean by this?’. Now I had the idea that the communication between the participants and myself sometimes went back and forth, back and forth... with all those mails. I try to find out what they mean, but it is much more difficult in an asynchronous way.

Miranda said that some of her participants did not feel any need for synchronous contact moments. They felt that they could keep a lower profile like that, and that this is different in a synchronous moment, so they preferred asynchronous online contact methods. Miranda said: “Some of them are doing their tasks, and they are doing them good, but they feel like ‘just leave me to it and I will complete it’, and then I do not see any reason to bother them”. On the contrary Maria told a whole other story. In her group there was a general tendency to prefer synchronous contact methods over asynchronous ones. Maria stated:

In my group there is one woman who refuses to post something on the forum and who hates mails. She told me that she was afraid for typing mistakes and afraid for posting the wrong things, which completely made her dislike the online features we offered. The other members of my group supported her stance, but not so strong. But it could indicate that there still are people for who it is not that evident to go online.

Another experience that the coaches shared was on the possible added value of the programme. They all agreed that the content that was offered could be beneficial for the participants' professional practices. Iris stated that most of the participants in her group finally started to realise what the possibilities were of the content offered in the programme: "Some participants really come to me and say: 'now I know what the purpose is of all these tools and how I can use them', and I do think some participants will use the things they see here". The coaches were surprised that the participants highly appreciated the first module. The first module was the one which offered the TPACK framework and it mainly presented a rationale for online teaching, and it was a fairly theoretical part. Iris said: "I think this is because many of them are already busy with finding their way in online teaching, and seeing this together in a framework offers them a lot of value". Gaby added: "It is indeed good that they think about that. If you know why it [online teaching] is useful, then you start to see it in another way and I think you are more critical for yourself".

A final part that captures the coaches' experiences is their general alignment on the merit of professional and peer support. It is somewhat related to the first part that was being discussed – online coach as motivator – but the difference herein lies in the fact that professional and peer support is seen as much broader than merely motivation. Maria stated that the support offered by the coaches and also the peers sometimes led to quite some extensive changes in the end-product of the participants. This support came in forms of corrected tasks, peer-discussions, peer-collaborations and question-and-answer moments. It was also discussed whether or not a 'buddy-system' would be beneficial. In general this would mean that a participant would be – maybe interchangeably – paired with another participant who is acquainted with the professional activities of the other. All coaches thought that this could certainly benefit the participants, but that not all participants would find this pleasurable. As stated earlier, some participants like the fact that asynchronous online contact moments offer a way to stay under the radar and to remain more anonymous.

### **The participants' experiences with the Digital Didactics programme**



With regard to the participants' long-term experiences, this section presents the in-depth stories of the three participants' experiences eight months after the programme.

**The case of Jill.** Jill stated that she was already quite aware of the theory offered in the programme, which indicates that the online content was not that new in itself. She said that online teaching highly depends on the context in which it is implemented. To illustrate this, she stated that: "The implementation of a specific tool was cancelled because the bandwidth was not sufficient in certain places". In that particular case, the infrastructure did not allow the implementation of a certain tool. In addition, Jill also stated that implementation is not simply a matter of having the right infrastructure, but it also relates to whether or not the teacher is ready to teach in an online format, and whether they accept the possibility that they need to enact a new role: "There are some people who are so used to teaching in a classroom for years that are now becoming a tutor instead of a lecturer ... That is a difficult switch for people and it is one that I certainly understand". She argues that teachers often use their former face-to-face teaching experiences to compare their online delivery mode, but they do not sufficiently ask themselves whether or not online learning is appropriate.

One of the main long-term experiences reported by Jill was that she now thoroughly questions the 'why' of online teaching, and is more critical and reflective in developing an online course. This could be because the first module – which according to the coaches was highly valued by the participants – targeted specifically the rationale behind online teaching. This reflecting on the 'why' of OT might have raised her self-confidence, because possibly she knows more about when and how OT could be beneficial. She stated the following when a colleague asked her to support his development of an online educational course:

My response is then immediately, and this is due to the DD programme, that I ask: 'Why do you want to do that? What is the merit? How is it now? What is the reason that you want to do it?' My questions are guided much more towards the 'why' of teaching online, rather than the idea that we just merely need to digitalise our courses because we have to. But, who is your target group? Do your students actually need it? What is the goal?

In addition to focusing much more on the ‘why’ of teaching online, Jill noticed eight months after the programme that her colleagues valued her opinion more when it came to discussing online courses. She also began to feel more self-confident in answering questions on the subject. This could be because Jill gained more knowledge about online teaching due to the extensive content offered in the DD programme. She stated:

I notice that I have a certain way of looking at the digital part, and that has to do with the DD programme, that I have a solid background. When there is a meeting or a discussion or when I am defending my point of view ... they really listen to me.

Furthermore, she indicated that because she now felt that she had a good basic knowledge of online teaching, this helped her when she needed to convince her colleagues of the possible merits of online teaching. She felt confident doing so because she knew what she was talking about. She stated that she focused much less on the technological aspects and much more on why online learning should be implemented. Last, eight months after the programme Jill referred to the positive influence of learning together with her peers and the advantage of having an online coach during the programme: “I liked the fact that we had a coach in the programme [...] her presence and her questions on how we were doing contributed strongly to remaining motivated to keep participating in the programme”.

**The case of Henri.** Like Jill, Henri also stated that the context of online learning implementation was one of the most important features he experienced:

I recently integrated a big online component in one of our courses, and if the digital part does not work ... then you have only half of the course ... I arranged some tablets and everything was set to go, except that a ‘Mister No’ in the management team did not understand that we needed to invest in Wi-Fi ... and like that there is always something.

This quote indicates that context should not always be an infrastructural feature. Henri stated that it was not only the physical infrastructure that could impede a decent implementation of online components, but that this could also occur because one had to wait for approval from other departments or superiors.

With regard to the long-term experiences, he is in large agreement with Jill. Henri stated that he also took more time to critically reflect on the implementation of online teaching. Before participating in the DD online programme, he immediately looked for the possible tools that would fit with a teacher's question concerning the implementation of online teaching. However, now he examines the situation and considers whether online teaching would offer a solution to the teacher's proposed problem or question:

Now I hit the brakes when it comes to the digital tools. I first examine thoroughly:  
What is the purpose? What does it have to do? What do you want and why do you need it? That critical examination is something I learned from the DD programme.  
It was a good thing to teach me that, and I still do it now.

Henri indicated that his problem-solving approach now originated from a more didactical point. He also stated that he had become a reference point for online teaching within his institution. He attributed this to the fact that the news of his participation had spread throughout his work environment: "One colleague learns from another. I tell something to one colleague and then it slowly starts to reach the whole team. It ends up with me getting many questions or the request to speak at certain meetings". Like Jill, Henri indicated that the online programme had helped him to convince colleagues of the possible merits of online teaching. He responded as follows to the question of how the knowledge he had gained had helped him in his practice eight months after the programme:

You have to convince your colleagues of the win-situation ... Some teachers fear for their job. They think that the digital wave is an or-story and not an and-story... It is not easy to convince them that it can be an and-story... then I sit down with them and I show them.

**The case of Johanna.** Johanna's case demonstrates several similarities with those of Jill and Henri. Johanna also stated that the existing context of where one is seeking to implement online teaching is a highly influential element in the process of integrating it into one's teaching practice. She noticed during the course of the programme that she was unable to immediately implement the online programme's content due to contextual thresholds at the higher education centre where she worked:

Some of my colleagues choose to work with tools that are not inherent to our online learning platform, which I do understand. There are some flaws that are too rigid. Then I wonder if I will also use these 'alternative routes'... The context that our institution offers certainly limits you as a teacher in your options.

With regard to the long-term experiences of the online DD programme, Johanna indicated that she reflected more on why the use of online teaching may be beneficial. Like Jill and Henri, she raised questions concerning the 'why' of online teaching, rather than focussing on the technological traits:

I liked that you [the online coaches] gave suggestions for tools and that you did not start with the technological part: 'What do you didactically want to reach with it and what is a useful tool?' [...] That I liked very much in the course, the 'why', and it was one of the first things I noticed when I started the course.

Closely related to this long-term experience of questioning of the 'why' of online teaching, Johanna indicated that this also affected how she taught and prepared her other courses. She said that she learned to adopt a critical stance towards her teaching subjects and that she also tried to convey this to her students. Johanna later questioned how she could integrate a critical stance in her future online courses, and how she could teach her students to adopt such a critical stance:

If I were to make my courses digital, how would I integrate it [the critical stance]?  
For me, there is a big advantage to integrating a critical point of view in them [the digital courses]. I think we should fundamentally question more things ... and now I notice that I ask myself that question more often.

Another long-term experience that Johanna noticed, and which was unique for her, was that she sought to make her material open source, which might come from the fact that the DD programme often made use of or promoted open source material. She stated that:

When I want to make something digital ... then I also want to be able to open it up to a broader crowd. That is something I still keep in mind. It has to be more open. I have to share my stuff more often ... it seems useless to develop it only for my students.

### **Recurring themes identified between the coaches' and the participants' experiences**

There were severable similarities noticeable across the coaches and the three participants. First, they all strongly emphasised the fact that context is a crucial element to consider in implementing online teaching. For example, they argued that it is not only infrastructure that is an important element, but also the approval of other departments and superiors. The coaches mainly felt an influence of their own institutional context on their coaching qualities. The quality of the coaching was hindered when the coaches had more work for their own institution. Their online coaching was in essence a form of online teaching, hence in that way we can say that the coaches' institutional context affected their online teaching. Therefore, the first theme that emerged was: *The crucial role of context for online teaching*.

Second, the three participants all indicated that they reflected more on the rationale of online teaching. In this respect, the DD programme affected their ways of thinking and their reasoning with regard to online teaching. This result was not surprising as the main target of the DD programme was to immerse the participants in the didactical possibilities of online teaching and how these online technologies could aid their teaching practice. The coaches too

noticed that many of their participants were thinking more often on how to *teach* with online technologies. They specifically were surprised that the participants strongly appreciated the first, theoretical, module that offered them a rationale for online teaching. Therefore, the second main theme that emerged can be stated as follows: *A heightened didactical reflection on the reasoning underlying online teaching.*

Moreover, the following results were acknowledged by two of the three participants and some of the coaches. Firstly, they (Jill and Henri) felt more valued or acknowledged by their colleagues in discussions on online teaching and that they felt more self-confident. Secondly, they (Jill and Henri) were aware that the knowledge they had gained from the training had helped them to convince their colleagues of the possible merits of online teaching. The coaches had similar experiences while they were working with the participants. It was argued that some participants experienced less self-confidence in online learning environments and did not really like the offered features, while others strongly preferred the features that online environment offered. This shows that the online features can instigate both positive and negative experiences. This can be described by the theme: *An influence on self-confidence.*

Third, the coaches and the participants (Jill and Johanna) kept emphasising the advantage of receiving professional and peer support. Jill and Johanna indicated that they strongly valued the possibility of working together online. The coaches argued that offering online coaching was one of the best features of the programme. The coaches think that without the online support, even more participants would have dropped out. They less agree on the fact that whether this support should be given via online synchronous or asynchronous methods. Nevertheless, both coaches and participants valued the fourth theme: *The importance of online professional and peer support.*

Finally, the fifth result was that two of the three participants indicated that they had adopted a more critical stance towards the use and possibilities of online teaching (Jill and Johanna). This is also, marginally, indicated by Gaby who was one of the coaches. Combining this, the fifth and final result can be described by the theme: *The creation of critical awareness with regard to online teaching.*

## **Evaluating the programme following Salmon (2011)**

Salmon (2011) suggests five characteristics for online teachers, which were discussed in the theoretical part of this paper. In short, the five characteristics were: Understanding the online environment used; Technological skills; Online communication skills; Content experts and finally; A positive attitude as online teacher. The following section compares the five characteristics from Salmon (2011) with the five themes earlier discussed in section 4.4. While some nuances should be made to the conclusions drawn and their generalisability – and which is done in the limitations section – it could be argued that the DD programme targeted all five of Salmon's (2011) characteristics, although some more obviously than others. The five identified themes in this study do not act as five golden rules or guidelines one should strive to attempt. They are intended to shed light on the experiences from those involved in the DD programme and to see how the programme and the identified themes could be compared to the current literature. Hence, they are more intended as a starting point for new research or further examinations of this study's results. Thus, the comparison made here with Salmon's (2011) approach is a tentative approach. The first of Salmon's (2011) characteristics is understanding the online environment used. It could be argued that this first characteristic can be aligned with understanding the contextual factors for online teaching. If one is to understand what is possible within one's own context, then one should know how a certain learning environment works. This is necessary to get an idea of how well a learning environment could be implemented in a certain context. It seems to us as authors that you cannot implement any learning environment properly without taking the contextual elements into account.

The technological skills and content expert knowledge characteristics of Salmon (2011) could be aligned with the experienced heightened didactical reasoning as regards why one could use online teaching. If somebody wants to teach online, that person, would need to have – and hereby this paper refers to the well-known notion of TPACK – inter alia content knowledge and technological skills. Where the content knowledge not only refers to a specific course subject, but also to content knowledge about teaching online. Thus, if the coaches and the participants indicate a heightened didactical reasoning for the why and the how of online teaching, it can be tentatively assumed that the content expert and technological skills, as indicated by Salmon (2011), were addressed.

The communication skills as indicated by Salmon (2011) were a bit more difficult to align with the experiences as indicated in this study. They were definitely addressed, but not with the aim or tendency of improving them. This study shows more what kind of communication is preferred, and it can be stated that it is difficult to find ‘one voice’ on that matter. Next to that, as showed in the experiences of the coaches, there are participants who like the features of the online environment, while others strongly prefer to avoid using them. Which often tracks back to communication preferences, like the participant who disliked asynchronous online communication because she was scared to post incorrect things.

Finally, the attitudes (Salmon, 2011) can be aligned with the experiences of critical awareness towards online teaching. If the participants experience an increase in their critical awareness towards online teaching, then this can be seen as a change in their attitude. That they gained a more critical attitude.

## **Discussion**

The current study targeted to present and compare the different experiences of the coaches and three participants of the Digital Didactics (DD) programme. Furthermore, the programme was described/analysed using a framework from Lawless and Pellegrino (2007) and the experiences identified by the coaches and participants were compared with the five suggested characteristics of online instructors from Salmon (2011). In doing so, attention was given to the online features of the programme which might affected the identified experiences. Using this framework from Lawless and Pellegrino (2007) and the characteristics of Salmon (2011), it became apparent that using pre-determined frameworks or guidelines always leads to difficulties in categorisation or interpretation. The authors of the study presented for example found the framework of Lawless and Pellegrino (2007) beyond doubt useful, but also think it needs some improvements. Bearing in mind that ‘when to choose is to lose’ it will always be a challenge to offer a framework that acts as an evaluation guide that captures the vast richness of scientific research within OTPD. However, we think that mainly the unit of analysis and the design and methods as now described by Lawless and Pellegrino (2007) are too rigid. For example the unit of analysis does not account for the coaches’ or trainers’ experiences. It might



be a better approach to offer a description of how the unit of analysis is conceptualised and then leave the possibility open for a more detailed description, instead of choosing between pre-determined categories.

The coaches' experiences showed that offering professional development online can instigate both negative and positive experiences. However, offering online coaching appears to be a highly valued feature of the online environment (Tanis & Barker, 2017) that can motivate and stimulate participants to persist in the OTPD. Next to that, the participants favour that the online content matches their current professional needs (Philipsen, Tondeur, & Zhu, 2016), which could be strengthened by the fact that they have to work on a real-life problem or question from their own practice. Finally, a third feature that is highly valued is that the OTPD offered a stimulus and a rationale to reflect upon the reasoning behind online teaching (Prestridge, 2010).

OTPD initiatives are very diverse in inter alia their purpose, model, objectives and content areas (Dede, 2006). If we compare the identified themes of the examined DD OTPD programme with the existing literature we can note some similarities and differences. The importance of context has been extensively discussed in both general TPD studies (e.g. Consuegra & Engels, 2016), in TPD studies targeting OBL (e.g. Gregory & Salmon, 2013), and in OTPD research (Dede, 2006). The same can be noted for professional and peer support (e.g. Valenčič & Vogrinc, 2007). This study also showed that the participants' opinion towards online teaching was valued more by their colleagues through their participation in the online DD programme. This possible result of OTPD is less present in the existing literature and only few studies on OTPD show a possible experience on collegial relations (Lindberg & Olofsson, 2010), despite the fact that research clearly indicates the importance of collegiality in general TPD (Park, Oliver, Johnson, Graham, & Oppong, 2007). Kelly and Cherkowski (2015) argue that TPD can lead to a heightened level of trust and appreciation towards one's own colleagues.

The heightened didactical reflection on the reasoning underlying online teaching is in line with previous studies that advocate a sound pedagogical and didactical objective in implementing ICT (Ertmer & Ottenbreit-Leftwich, 2013), and how reflection can be used to support teacher learning of online technologies (van der Meij, Coenders, & McKenney, 2017). In developing a PD initiative, it is essential to consider the sustainability of the immediate teachers' experiences (Zehetmeier, 2010). In this case, we can assume that the heightened didactical

reflection sustained over a longer period of time, if the premise would be met that the participants already experienced this during or at the end of the DD programme. In this research, this may also apply to the reaction of the participants' colleagues. We should acknowledge that this experience probably requires time in order to become completely formed and manifested. Thus a difference here is that the didactical reflection is – probably – a sustained effect, and that the collegial appreciation might have needed time to develop. Therefore, further research is advised with a larger sample of participants in order to continue investigating these results.

### **Limitations and directions for further research**

The presented research was carried out with a small sample size of respondents. Therefore, we cannot generalise this study's results, albeit that it never was the goal of this study. One of the greatest challenges in small sample sized studies is drawing an interpretation of the result (Hackshaw, 2008). Important to ask is whether or not large sample sizes are needed for the specific research presented (Hackshaw, 2008). In the description of the participants it is already highlighted that although the sample size is small, it still can contribute to or evoke new ways of understanding of a certain phenomenon (Boddy, 2016). It remains however a difficult quest finding the right sample size for qualitative papers. Further research could certainly focus on how to decide adequate sample sizes and why those sizes can be seen as a reasonable cut-off. The idea of data saturation can be of help at a conceptual level (Guest, Bunce & Johnson 2006), but it offers limited guidance for research when sample sizes are not pre-determined. Furthermore, "[...] the issue of what constitutes an appropriate sample size in qualitative research is only really answerable within the context and scientific paradigm of the research being conducted" (Boddy, 2016, p.5). Examining if a sample size was suitable thus has to be done in the light of the goals of specific research objectives and the interpretation of the results.

The same can be said on the fact that interviewing participants still remains a form of self-report and some important nuances should be taken into account. One has to remember that the participants might give a socially desirable answer during the interviews or that people feel forced to answer certain questions (Patton, 2015). It however remains an interesting way of collecting data because one can interact directly with the participants, creating a pleasurable

atmosphere and allows the researcher to intervene when misunderstandings arise (Patton, 2015).

## Conclusion

Taking into account that generalisations were not the aim of this study, some concluding statements can be formed. First, the use of a programme evaluation schema can be a valuable approach in describing and clarifying the intention and process of an OTPD programme. Furthermore, the use of this schema can also illuminate the strengths and weaknesses of that particular schema. Additionally, this study showed that in OTPD there can be a great level of alignment between the experiences of the coaches and the participants. Finally, one has to be aware that online features can instigate both negative and positive experiences with participants. Offering professional development online is not merely transferring the content to an online delivery mode. It demands a precocious yet professional approach to reach the desired results OTPD thus remains an endeavour that should be treated with the thoughtful care it deserves.

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## **Appendix**

### **Questions asked during the semi-structured interview 8 months after the DD programme:**

- How did you experience the programme of DD?
- Do you notice any differences in how you prepare your professional activities?
- Did you make any changes to course material?
- Are there any changes in your professional activities?
- Were you able to integrate the content of DD into your own professional activities?  
How?
- Did the DD programme change your view towards good teaching and good education?
- Were your colleagues aware of the fact that you followed the DD course?
- How did they respond?
- Do you still make use of the website?
- Which parts of the DD programme did you like and which parts are up for improvement?





# **Chapter three: Evaluating a professional development programme for online and blended learning: A hermeneutic phenomenological approach<sup>3</sup>**

## **Abstract**

The increased number of courses taught in an online environment has led to more teachers in need of professional development for online or blended teaching. Although various professional development programs have been scrutinised, only a few studies integrate the feelings of teachers during their professional development process. Teachers' feelings form an inherent part of their teacher-selves and are reflected in their everyday practice. Therefore, this study uses a hermeneutic phenomenological research method to examine the lived experiences – the feelings – of educational staff within a professional development program that targets online and blended teaching. The results indicate that teachers experience a large range of feelings and that these fluctuate throughout the program. These include positive feelings of connectivity, responsibility, and satisfaction, but also more negative feelings of chaos and frustration. The recognition and understanding of these feelings can illuminate particular aspects of professional development that are experienced more positively or negatively, which can guide further efforts for qualitative improvement.

## **Theoretical background**

### **Teacher professional development for online and blended teaching**

Many teacher professional development (TPD) initiatives have been developed in order to immerse teachers in the possibilities of online and blended teaching (OBT) (e.g., Philipsen, Tondeur, & Zhu, 2016). An initial literature study demonstrates that the design features and factors of a successful TPD for OBT are very similar to those of a general TPD. Both general and OBT TPD emphasise a thoughtful duration (Consuegra & Engels, 2016), the need for

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<sup>3</sup> Adapted from: Philipsen, B., Tondeur, J., Pynoo, B., Vanslambrouck, S., & Zhu, C. (2019). Examining lived experiences in a professional development program for online teaching: A hermeneutic phenomenological approach. *Australasian Journal of Educational Technology*, 35(5), <https://doi.org/10.14742/ajet.4469>

professional and peer support (Desimone & Garet, 2015), active learning (Consuegra & Engels, 2016; Gregory & Salmon, 2013), the relationship between theory and practice, and the experience of a TPD's relevance (Hallas, 2006; Wilson, 2012). Thus, general TPD and TPD for OBT appear quite similar at first sight. However, a possible difference can be identified in the teacher's personal development level, which involves the identification of one's teacher-self in an online environment (Baran, Correia, & Thompson, 2011). In addition, online teaching can be seen as new way of arranging, supporting, and guiding learning activities (Salmon, 2011) that repositions the persona of the teacher-self into a mode that is (usually) new and digital. While more differences can certainly be identified, it is the pivotal role of the teacher's professional identity and teacher-self in OBT that appears to be one of the most documented (e.g., Baran et al., 2011).

### **Teachers' lived experiences with OBT: The role of professional identity and feelings**

If teachers' professional identities and teacher-selves may play a pivotal role within TPD for OBT (e.g., Baran et al., 2011), this makes an examination of the effects of a training program on that professional identity an interesting proposition. However, it is not easy to grasp the complex and ongoing process of the development of teachers' professional identities (Hsieh, 2015). One way of examining and approaching teachers' professional identities, or what Kelchtermans (2005) terms their teacher-selves, is by means of teachers' feelings (e.g., O'Connor, 2008). This study notes a distinction between teachers' feelings and their emotions. Both terms are commonly used, yet defining them can be strikingly challenging. Their differences are outlined by Scherer (2005), who points out that emotions are essentially an innate trait of human beings, which are elicited by a stimulus event and are appraisal driven (Scherer, 2005). By contrast, feelings can be seen as a response to a certain subjective emotional experience (Scherer, 2005). In an educational context, the following example might create some clarity: The emotion of fear of losing one's job as a teacher can elicit a feeling of responsibility to do whatever it takes to keep that job. The same emotion might also elicit a feeling of resentment at not being recognised for all the hard work one has already done. Thus, emotions can elicit a vast range of feelings. However, this is a highly debated field, and one in which consensus has not yet been attained (Scherer, 2005).

Feelings are of “fundamental importance in teaching and to teachers” (Nias, 1996, p. 293), and teachers experience a vast range of feelings throughout their careers (Hargreaves, 2005). Recent research shows that teachers’ feelings affect their memory performance and the fluency of their decision-making and could therefore also affect their ability to learn (Reber & Greifeneder, 2016). Such feelings comprise an important and self-evident aspect of the practice of teaching (Kelchtermans, 2005). Moreover, when teachers invest their selves in their profession, their feelings and professional identities often become merged with each other (Nias, 1996). However, recent literature does not integrate these feelings when evaluating professional development initiatives, and particularly not when these are targeted at OBT. Teacher professional development research often adopts an effectiveness perspective, while neglecting the personal level (Evans, 2014). In order to address this gap, this study uses a hermeneutic phenomenological approach, which is a suitable and valid approach for examining teachers’ feelings during a certain phenomenon (van Manen, 2015), in this case TPD for OBT. Teachers’ feelings are understood as the ways in which teachers experience certain moments and live through particular phenomena. In short, they are concerned with their experiences (van Manen, 2015). Lived experiences shape teachers’ ideologies and affect how they perceive themselves in their classroom practice (Kenyon, 2017). In addition, they are closely related to teachers’ professional identity construction (Becker, 2013). Therefore, this study approaches the professional identity of teachers by examining their lived experiences during a particular phenomenon, namely a TPD for OBT. This was done by investigating which feelings lie at the base of this experience. In this way, the study sought to understand how teachers feel during a TPD for OBT, which can inform us about their lived experience of the training program and their professional identity. Figure 1 presents a conceptual approach that demonstrates where this study positions teachers’ feelings towards their larger professional identity. The study focused solely on the inner circle, namely, the teachers’ feelings.

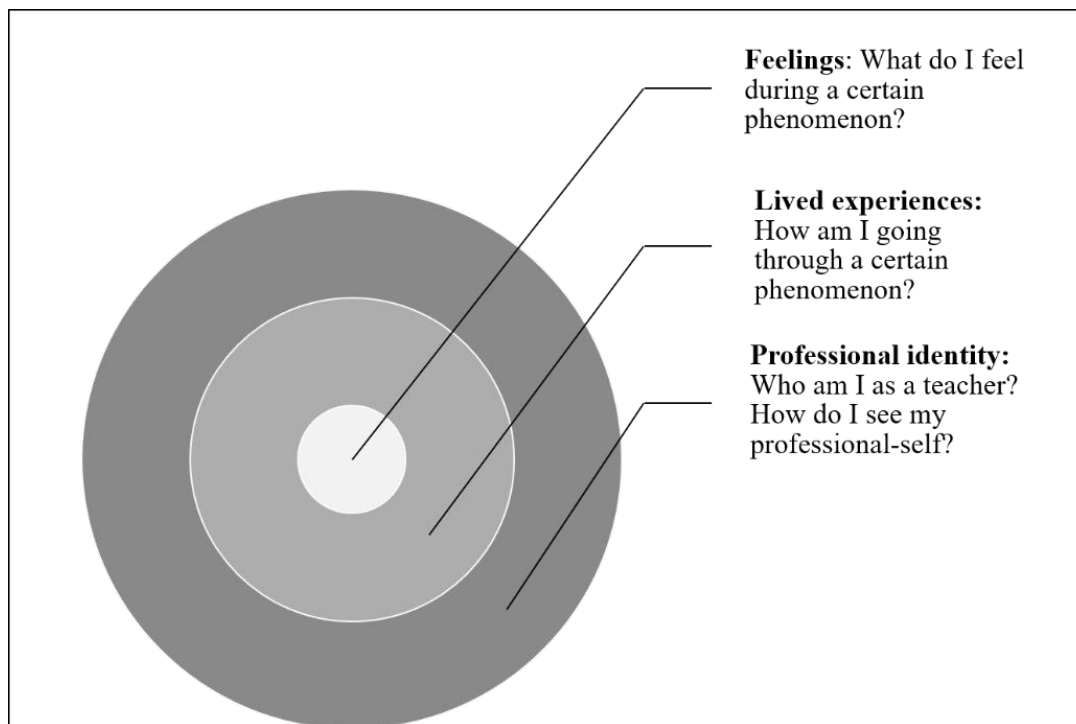


Figure 1. Conceptual approach

## The training programme and the purpose of the study

### Introduction to the programme

The training program was co-designed with Toll-net, an organisation that targets technology-enhanced lifelong learning and is situated in Flanders (the Dutch-speaking part of Belgium). The co-constructed blended training program sought to immerse teachers in the world of online teaching. The focus of the program was twofold and consisted of a focus on teaching online, which meant that most of the attention was directed to teaching with technology and developing a vision of online teaching; and a focus on the teacher's role and professional identity in an online learning environment. The program started at the beginning of February 2017 and lasted until the middle of June 2017. The following six modules were offered: (a) Good to know (Why do you want to offer online or blended teaching?); (b) ICT and learning (Developing a vision of teaching in an online or blended way); (c) The perspective of the online learner; (d) Learning technologies; (e) The design of e-material; and finally (f) The development of e-material. The trainers held three face-to-face supervision moments, in addition to one that was conducted in

an online meeting room. The focus on the professional identities of teachers in an online environment and how these related to their feelings (O'Connor, 2008) meant that part of one of the face-to-face supervision moments was dedicated to that specific subject.

The trainers invited all the participants ( $n = 10$ ) to an initial face-to-face moment, which formed the start of the training program. They provided support and feedback and set exercises throughout the duration of the program. After the first meeting moment, the trainers planned face-to-face and online supervision moments and followed the individual progress of each participant. The program was based on several theoretical underpinnings: a thoughtful duration (e.g., Consuegra & Engels, 2016) in which we did not opt for a single one-shot training, but rather an intensive longer period of time; the need for professional and peer support (e.g., Philipsen et al., 2016), which we provided by means of feedback sessions and stimulated by requiring peer-feedback on the program's online learning platform; active learning (e.g., Desimone, 2009), which was stimulated by allowing the participants to actually experience what they were learning. For example, we offered the participants an online supervision session in an online meeting room (Vitero). This allowed them to actively experience what they were learning about, while actually learning the very same subject. In addition, we linked theory and practice (e.g., Hallas, 2006) by co-constructing the program using both scientific and practical input; and finally, we added relevance to the program (e.g., Wilson, 2012) by implementing an online questionnaire. This was a validated technological, pedagogical, and content knowledge – TPACK – questionnaire developed by Scherer, Tondeur, and Siddiq (2017). The results of the questionnaire were used by the trainers to fine-tune the course content to the participants' current TPACK level.

### **Purpose of the study**

This study aimed to examine the lived experiences of five participants in a TPD program targeting OBT by means of a hermeneutic phenomenological approach. During the analysis, the interpretative focus of the researchers was guided by the question of how the participants felt during the program. Therefore, the specific focus of this study was: How do the participants in a TPD targeting OBT feel during the PD process? Many studies that report on TPD for OBT report on the participants' gains in knowledge, skills, or attitudes (e.g., Comas-Quinn, 2011).

However, it can be argued that some TPD programs unfortunately do not examine the teachers' feelings during the program. This focus on feelings is more prevalent in more general TPD literature (e.g., Hargreaves, 2005; Kelchtermans, 2005), although it remains a minor aspect of the current literature, particularly in relation to OBT. Examining an experience from the inside by means of feelings is a good way to produce a description of a lived experience (van Manen, 2016). We would like to stress that this study did not investigate nor report the perceived effectiveness of the training program, but solely on the lived experiences. While an examination of the program's effectiveness is undoubtedly an interesting topic, this is not the aim of the present article.

## **Methodology**

### **Hermeneutic phenomenology**

Hermeneutic phenomenology seeks to gain a thorough understanding of lived experiences (van Manen, 2016). It does so by asking how a certain phenomenon is experienced by the person who lives through it in order to better understand the phenomenon examined (Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; van Manen, 2016). A phenomenological method seeks to describe and interpret lived experiences and their meanings in a rich and deep way (van Manen, 2016). Lopez and Willis (2004) stress the importance of going beyond solely descriptive accounts of the lived experience, and of searching for the meanings gleaned from the narratives produced by the participants. The lived experiences should be portrayed in texts that subsequently can be interpreted for their meaning (Lindseth & Norberg, 2004). As the science and art of interpretation and meaning (Henriksson & Friesen, 2012), hermeneutics is concerned with the study of texts (Lindseth & Norberg, 2004). As Henriksson and Friesen write: "Hermeneutic phenomenology is consequently the study of experience together with its meanings. Like hermeneutics, this type of phenomenology is open to revision and reinterpretation: it is about an openness to meaning and to possible experiences" (2012, p. 1).

### **Data sources**

Phenomenological research requires that one focuses on making meaning out of lived experiences (Friesen, 2012; van Manen, 2016). In essence, we "borrow" other people's

experiences and their reflections on their experiences in order to better be able to come to an understanding of the deeper meaning or significance of an aspect of human experience” (van Manen, 2016, p. 12). Furthermore, because the meaning and the understanding of lived experiences must originate from the interpretation of texts (Lindseth & Norberg, 2004), the data sources for the current study needed to be suitable for this type of research. The basic goal that guides phenomenological research is to grasp the complex nature of a particular phenomenon as a human experience (van Manen, 2016). This means that phenomenological inquiry relies on the collection of pre-reflective, remembered moments (Adams, Yin, Vargas Madriz, & Mullen, 2014). Therefore, we made use of three different data sources for the current research, namely, protocol writing (descriptions of lived experience), interviews, and observation notes (van Manen, 2016).

The protocol writings were collected as part of the reflective writings produced during the TPD program. The participants were asked to post these reflections in an online portfolio. They were asked how they experienced certain moments (e.g., the first contact moment) and how they felt during these moments. These texts provided an original data source, with which the researchers were able to work (van Manen, 2016). They also put people into a reflective mode, which differed from the following data source, namely the interview, in which the participants were more immediately involved (van Manen, 2016).

The main data source for this study was a hermeneutic phenomenological interview. This serves a different function from interviews used for other types of qualitative research. The current study did not seek generalisations, nor did we ask why certain feelings appeared more often than others. Rather, we sought to examine how the participants experienced the TPD program by examining which feelings they experienced as they lived through it. This had implications for the interviewing method. There were two interviews for each participant, which were not held in a formal setting but in a place chosen by the participants. It was necessary for them to feel comfortable in that specific environment due to the highly personal nature of the interview (van Manen, 2016). Questioning somebody about their feelings in relation to their experiences at a particular moment does not involve everyday questions, and therefore needs to occur in an atmosphere of trust. Some examples of the questions asked included “How did you feel when you entered the room during the first contact moment and

you first met all those people?”, “How did you feel when you were having trouble getting to the meeting point?”, and “How did you feel when your colleagues at school started to ask what you were doing in this training program?”

In addition to protocol writing and interviewing as a data source, we also used observation notes. These notes were compiled throughout the entire professional development program. They were collected whenever there was a contact moment or an online meeting moment. The notes were based on the participants’ contributions on the online learning platform. The observation notes and the protocol writings were used mainly to complement the hermeneutic phenomenological interviews. The interviews were the main data source, and the findings from this data source were compared to the protocol writings and the observation notes in order to check whether they were congruent. If any notable differences or dissonances were identified, this was noted in the results. However, no notable differences were found between the different data sources used in this study.

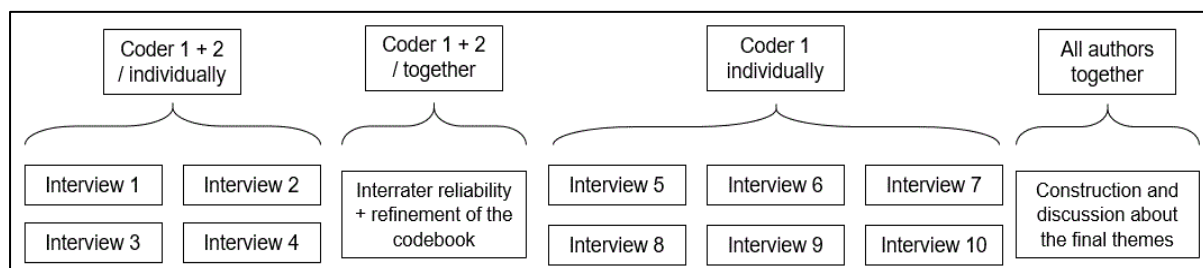
## **Data analysis**

The textual data was imported into NVivo 10 and was analysed by means of an inductive approach that used thematic analysis (Braun & Clarke, 2006; van Manen, 2016), without any predetermined categories (Patton, 2015). The study conceptualised a theme as the form by which we sought to capture the phenomenon of professional development for OBT, and to make sense of something that basically “gives shape to the shapeless” (van Manen, 2015, p. 12) in an experiential structure. A thematic analysis offers a way of identifying and uncovering the underlying themes in a given data set (Braun & Clarke, 2006). Although it is extensively used as a method of analysis, it often remains inadequately defined (Boyatzis, 1998, Roulston, 2001). Therefore, it is important to clarify the approach used in elucidating the thematic aspects of a phenomenon in a textual data set, particularly in phenomenological research (van Manen, 2015). To illustrate this, we can note that three approaches are generally applied in order to uncover thematic aspects. These are a holistic approach that targets the underlying meaning of the entire text, a selective approach in which one examines which phrase(s) or statement(s) are considered to illuminate the phenomenon being examined, and a detailed approach in which



all the sentences are individually examined with regard to their significance to the phenomenon (van Manen, 2015). In this study a selective approach was used.

Three main general steps were followed with regard to the process of thematic analysis (Braun & Clarke, 2006), namely, the transcription of the data, the coding the data, and the analysis of the data. After all the transcripts were imported into NVivo 10, we used the selective approach and conducted an initial open coding (Miles & Huberman, 1994). The following step consisted of the axial coding (Miles & Huberman, 1994), in which the single codes from the open coding process were grouped into larger categories. These categories form the basis of the themes discussed in the Results section of this article. For example, the larger category feelings of satisfaction encompasses two smaller subcategories, namely, feelings of pride and feelings of being happy. All the interviews were largely coded by one author. Additionally, a second author was asked to code some of the interviews in order to examine the reliability of the current study and to assess the consistency of the two different coders. An interrater reliability score was derived from a coding comparison query in NVivo 10 in which the second coder also independently coded the first four interviews. Cohen's kappa (.70) was considered as substantial agreement between the two coders on the first four interviews. A discussion was held between the two coders to refine the code book in order to resolve any disagreements. The first coder then continued to code the following six interviews. Finally, all the authors were involved in the construction of the final themes. Figure 2 presents this process.



*Figure 2.* Coding process and construction of the final themes

## **The role of the researcher and ethics of phenomenology**

As researchers, we needed to recognise and acknowledge that our own experiences and preconceptions influenced our interpretations when examining and interpreting the lived experiences of the study's participants (Lopez & Willis, 2004). Moreover, researchers involved in phenomenological research need to be aware that they “cannot step outside the moral values” (van Manen, 2015, p. 2) of human science research. This implies that one remains aware that one's research may affect institutions and people in a long-term way, and that it may even affect the researcher (van Manen, 2015). In our case, our perspective was rooted in our experiences as both practitioners and researchers. As practitioners in teacher education programs, we were frequently confronted with the feelings and experiences of pre-service teachers during the course of their internships within several educational institutions and at various educational levels. In addition, we also recognised our own feelings during teaching processes and professional development initiatives. As researchers, we had identified that TPD programs rarely paid attention to how teachers felt during their professionalisation process. This was particularly the case when the program targeted online or blended teaching, which motivated us to conduct the present study. We therefore acknowledge that our experiences in this regard may influence our interpretations. During the data analysis procedure, we held frequent discussions on the feelings identified, together with their descriptions. This was done in order to remain vigilant regarding our own preconceptions and in order to obtain a valid description of the phenomenon examined (van Manen, 2015).

## **Context of the study and the participants**

A professional development course was co-designed and developed with Toll-net. Toll-net is a Flemish organisation that provides training for technology-supported lifelong learning. The program originated from Toll-net's existing training programs, which were supplemented by recent scientific insights provided by the researchers. This led to the co-creation of a new, scientifically supported TPD program that targeted online teaching. Ten participants enrolled in the program, and five volunteered to participate in the current study. These five participants

came from various backgrounds, yet all had similar reasons for participating in the TPD program. They all faced a specific real-life problem related to online or blended teaching. During the TPD program, they were all asked to focus on their specific real-life problem. This was done in order to strive as much as possible for a useful end product. All the participants met at a real-life kick-off moment at which the program was presented, and at which all the participants got the chance to meet each other. During the first meeting, all the participants were informed about the research and signed an informed consent form indicating their agreement. A sample size of five participants could be deemed too low, although that is considered a suitable sample size for hermeneutic phenomenology (De Gagne & Walters, 2010). The ideal number of participants in a hermeneutic phenomenological study depends on the nature of the study (Laverty, 2003), but a smaller number of participants is generally preferred in order to clearly portray their lived experiences (e.g., Crimmins, 2017; Ottenbreit-Leftwich et al., 2010; van Manen, 2016). Table 1 presents basic information on this study's five participants. Their names have been adjusted to respect their privacy.

Table 1: The study's participants.

<b>Name</b>	<b>Gender</b>	<b>Age</b>	<b>Current employment</b>	<b>Previous experience with OBT</b>	<b>Reason for participation</b>
Claire	F	26	College lecturer and researcher	No	To gain information on designing, developing, and guiding e-courses.
John	M	46	Secondary school teacher	No	To gain information on the rationale behind developing a school-appropriate app.
Julianne	F	41	Secondary school teacher	No	To gain a deepened insight into the implementation possibilities of OBT in a high school environment.
Meryl	F	45	Pedagogical counsellor for the implementation of OBT in adult education	Yes 1 year	To gain more detailed information on why and how OBT can be implemented in adult

					education and training.
Nicole	F	42	Director for 'competence and care' in a social service agency	No	To gain more detailed information on why and how OBT can be implemented in the courses provided by her social service agency.

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## Results

The study identified five distinct feelings among the participants. This section presents those feelings, together with several quotations to support the findings. These five feelings were found in all the participants and are therefore presented as core feelings. In this section, these feelings are ordered from more positive feelings to more negative feelings. This does not mean that they are exclusively experienced as either negative or positive.

### Feelings of connectivity

In this study, the participants' feelings of connectivity were identified as a sense of a mutual endeavour and a recognition that one learns from one another. Even before arriving at the first training moment, some of the participants were already wondering who else would be present: "I was very curious about who was going to be there, and I always find it nice to know why they are there. Because there are many kinds of people. I always find it interesting, all those different people" (Meryl). Meryl later specified that she likes to work in a group due to the learning possibilities this offers: "I am someone who likes to hear if I am doing a good job every now and then, and if the answer is no, then I want to know why so I can adjust my work." As already noted, in addition to the recognition that one can learn from one another, the participants also stated that they felt a sense of connectedness and of being in the training program together. Claire indicated that she immediately felt a connection with Meryl during the first moments of meeting:

I immediately felt a match with Meryl. I do not know if this was because I was sitting next to her, but we started talking right away. You can notice that she is a very open person and that attracts me. What she does in her professional life and what I do, we have some similarities and you do not have that with everyone.

During her second interview, Claire also stated that the social contact made her feel more connected to the professional development programme itself:

I liked it a lot that we met on a regular base so that we could talk with each other. During the first meeting we chose our communication channel to maintain our social contact. That made me feel more connected to this course because if we wanted to we could have done everything online. So, in that way I appreciated that [the social contact] a lot.

### **Feelings of satisfaction**

As with the previous feeling, all the participants indicated that they felt satisfied during and at the end of the program. These feelings of satisfaction were related to feelings of pride and being happy. The general sense of satisfaction was extremely diverse throughout the entire program. For some of the participants, this was related to small positive experiences, such as that of Julianne:

All the things that I gained from this course, of which I said ‘oh that is nice’ are already being used by my own colleagues here at school [...] that makes you feel satisfied and makes you want to continue with this course.

Although Julianne referred to the fact that her colleagues were also using the things she saw in the program, Meryl experienced feelings of satisfaction that were related to specific course content. She said: “The section in the beginning was very positive for me. The vision regarding education and distance education, that was ideal. I think that all schools should start with that. It is a very good exercise.” As noted above, the feeling of

satisfaction was also formed by feelings of pride. Julianne has already indicated that her colleagues also used the things that she saw in the program, and the following quotation illustrates how this made her feel: “They [her colleagues] always provide feedback and then you often hear immediately that they are enthusiastic about it [...] it makes me proud, it is a personal success.”

### **Feelings of responsibility**

All the participants experienced feelings of responsibility, but they differed with regard to why and to whom they felt responsible. Some of them believed that one is responsible for finishing what one has started. For example, John missed a trip to London with his students because one of the face-to-face meetings occurred at the same time as that trip. Although he admitted that he would rather have gone on the trip, he argued that his responsibility towards his school leader who had approved the training program meant that he should fulfil his engagement and complete the program by attending all the meetings. Claire stated that she felt a responsibility towards the program’s trainers to ensure that she was always on time and did what was asked of her: “I do not want to be late. What would they think of me? I need to make a good impression and make a good start [...] I want to do it well and make sure I respect the deadlines.” Although John and Claire felt responsibility – or accountability – towards other people, Nicole felt a responsibility to follow the course due to her function and the era in which we live:

I feel the need to adapt to the times and I think it is important that as a leader you know what you are talking about. I have to show that I am also looking for information, and I try to convey my enthusiasm to my team.

Julianne gave similar reasons that were based on her function. But it was also her personal vision that made her feel responsible for following this course and informing her colleagues about it:

I presented my e-portfolio to my colleagues because they often ask what I am doing. I then tell them how they can use it [e-learning] and they like that [...] it is also my vision and responsibility to implement this [e-learning] here at our school. I still think it is cool that I am actually succeeding in spreading my vision.

## **Feelings of chaos**

The participants' feelings of chaos refer to a range of lived experiences that related to a sense of confusion. The participants often indicated a sense of confusion and chaos during the professional development program. For example, while Meryl was riding home with another participant after the introductory session she asked herself, "What was that all about? Did I actually enrol myself for this?" During the introduction, the participants were given an assignment to create a portfolio and were able to choose which platform they would use. Most of the participants appeared to experience this as too unclear and were left with a sense of confusion: "It was one big chaos. One big chaos. Regarding my portfolio, I started over again three times because I did not know how and what ... it was chaos" (Meryl). Nicole stated that the program may have used too many different learning and communication platforms, although she also indicated that this may be inherent to such a training program: "It was really chaotic for me because of the different channels and tools [...] but maybe this is specific to such a trajectory? They [the trainers] also have to learn how to work with the tools and search for input." The feeling of chaos that was apparent in all the participants was therefore not necessarily negative. For some, the amount of freedom offered was too overwhelming and confusing. Others indicated afterwards that, although there was considerable chaos, it helped them to discern the tools they needed. They said that they ultimately found their way in creating a digital portfolio among all the possible tools:

Those learning paths often had a lot of content and I asked myself what was expected of me. Yes, there was chaos, but on the other hand I do feel that I found my way through all of that, and I was able to get the information that I needed.  
(Claire)

## **Feelings of frustration**

All the participants expressed feelings of frustration throughout the program, which were also linked to the smaller subcategory of stress and a feeling of being unsatisfied. One of the main points of frustration was the online intervention moment. The participants had to download a tool that enabled them to hold an online meeting. The underlying idea was that they should be able to meet digitally, while also experiencing an example of a tool suitable for online meetings.

However, some of the participants had trouble installing the tool, or their microphone did not work, or they found it irritating that their messages could only be a limited number of characters long:

I disliked that part [the online meeting] the most. It felt as if you were detached from everybody. You were sitting there alone behind your computer, wearing your headset, and that tool did not work immediately, so I got a bit frustrated. (Julianne)

To start with, the installation of the tool was very difficult. John had already told me that there were many problems with the tool and that his microphone did not work. You need a tool that is super easy. Plus we did not see each other. I find that stupid [...] You were staring at that screen and if you wanted to say something you needed to press a certain button, which did not work a single bit. (Meryl)

Of all the participants, John reported the most frustrations. On some occasions, he felt that the programme did not offer him what he had expected and that he would have liked more feedback:

I like the programme but it does not weigh up to the teaching hours that I missed in my class. For me, it did not always deliver what I expected. I missed twenty-eight hours in the same class. I do not really mind this if I get a return on my investment and that I missed sometimes.

## **Discussion**

This study has sought to examine the lived experiences of five participants in a professional development program targeted at learning to teach online. Their lived experiences were examined by depicting their feelings (van Manen, 2015) during the program. On the basis of a hermeneutic phenomenological study, five main feelings were identified that were apparent in all five participants. These were feelings of chaos, connectivity, satisfaction, responsibility, and frustration. Although these five feelings were definitely not the only feelings they experienced, they were the only ones reported by all five participants. These feelings align to a certain degree with previous research on teachers' feelings (Chen, 2016). Chen (also identified five distinct teacher feelings, namely, joy, love, sadness, anger, and fear. The current study's identification of frustration can be compared to Chen's identification of anger. Both



lead to a situation in which the teacher feels a sense of being displeased with the current practice. In Chen's study, joy and love are described as a profound sense of contentment. This can be aligned with the current study's identification of the feeling of satisfaction and being pleased with one's professional development. As with the study of Saunders (2013), the participants in this study reported both positive and more negative feelings during their professional development trajectory. Saunders (2013) also highlights how feelings can affect and interconnect with a teacher's professional identity. This means that they can experience extremely intense feelings when they are asked to alter their practice (Scott & Sutton, 2008). This is particularly true when the aim of the TPD program is online teaching, which can be seen as a new way of orchestrating teaching and learning (Salmon, 2011). Scott (2016) demonstrated that some teachers first change their teaching beliefs prior to changing their practice, while other teachers first change their practice and then change beliefs when adapting to online teaching. This means that when teachers are facing a change, it is difficult to predict how they will process this change. This is particularly true when this change entails something as complex as teachers' professional identities (Baran et. al., 2011) and feelings.

Teachers' professional identities are not only related to their self-perception as professionals (Jonker, März, & Voogt, 2018), but are also related to their relationships with their colleagues. Teachers care about how others see and judge them (Saunders, 2013). Therefore, the feeling of connectivity identified in this study (e.g., Claire's question, "What will they think of me?") may tell us something about a person's professional identity. As noted in the Introduction, we can examine teachers' professional identities by studying how they feel (O'Connor, 2008) during a certain phenomenon. Guided by the aim of our study, which was to examine the participants' lived experiences during a TPD program for online teaching, we can now state that they felt five distinct, yet related, feelings. Elaborating on this may give us an idea of what these feelings tell us about the professional identities of these teachers. The identification of these five feelings can indicate what our participants consider to be important. If we stay with the example of Claire, we might suggest that she cares a great deal about how other people see her and that she wants to make a good impression. This is supported by previous studies that demonstrate that people do indeed care about how others see them during a TPD program (Saunders, 2013). Furthermore, people want to be seen by their peers during TPD programs (Bills, Giles, & Rogers, 2016). Therefore, if our participants report feelings of connectivity and being seen (Bills et al., 2016), and if these feelings are interconnected and related to their professional

identities (Saunders, 2013), then we could suggest that their professional identities can entail *inter alia* a positive social presence. Thus, their feelings can indicate how our participants construct their professional identities, which is of considerable importance in a TPD program that targets online teaching (Baran et al., 2011). This means that coming to understand the feelings of teachers or practitioners during a TPD program for online teaching can give one a better idea of how they see themselves as online teachers. This can lead, in turn, to increased knowledge regarding how to design TPD programs for online teaching.

### **Implications for the design of teacher professional development for OBT**

The feelings reported by the participants in this study demonstrated their lived experience of a TPD program for teaching online. As such, they may help us to better understand how they view their professional identities. In addition, they indicate specific points of interest with regard to the design of future TPD programs for OBT. The feelings of frustration highlighted several points for improvement. We now know that the participants appreciated the freedom they experienced in choosing their portfolio tool, for example, but that there should be a limit regarding how far this freedom can go. Their experiences suggest that it would be better to provide them with certain examples from which they can choose. This would maintain the feeling of freedom, yet still support them by offering them a set of possible tools. The same is true of the feeling of chaos. The program, and particularly its online aspect, should contain a clear overview of where the participants are in the program, and of what is expected from them and by when. The trainers, for their part, should ask more frequently how the participants are progressing, and if there are any problems. For example, John stated that he wanted more feedback, and this is in keeping with Bills et al. (2016) who state that people want to be seen in professional development activities. In this case, John was actually sending a message that he wanted to be seen and heard, and that this affected how he felt during the program. Therefore, trainers should not only be easily approachable, but they should also give considerable and considerate thought to the delicate balance between providing room for self-directedness and giving guided support. Moreover, trainers need to become aware of and sensitive towards teachers' feelings during professional development initiatives. Teachers' feelings and their ways of expressing them may offer considerable information that can be valuable in the development and support of professional learning experiences. It would be interesting to see further research that targets this aspect.

While this applies to any TPD, the lived experiences of the people participating in a TPD program for online teaching need to not only be acknowledged by policy makers, administrators, and trainers (Saunders, 2013), but they should also be acknowledged by school leaders and professional development coordinators. Teacher change during professional development programs can lead to intense feelings (Scott & Sutton, 2008), and TPD programs should therefore provide the time and space to allow people to discuss these feelings (Saunders, 2013). Moreover, it should be made clear that these feelings are a completely natural part of teacher change and of participation in a TPD program (Schmidt & Datnow, 2005).

### **Limitations and suggestions for further research**

Further research could provide a more in-depth examination of the relationship between teachers' feelings and their professional identities. This could further our understanding of how specific feelings arise and which contextual circumstances influence this process. In addition, it would be interesting to discover whether teachers participating in other TPD initiatives report similar feelings. Both qualitative and quantitative approaches will be able to provide greater insight into this relatively under-examined aspect of TPD for online teaching. Future research could consider whether or not these same feelings occur in different contexts and with different sample sizes.

### **Conclusion**

This study started with the aim of examining our participants' lived experiences during a professional development program that targeted online teaching. The results of this hermeneutic phenomenological study indicate five core feelings that were reported by the respondents. The identification of feelings such as frustration, satisfaction, connectivity, responsibility, and chaos may enable us to better understand how the participants perceive themselves as professionals and what matters to them. The identification of the specific feelings of teachers and how they may be related to their profession and their professionalism may require some time and the development of particular skills. This may, in turn, provide an initial indication of how teachers' professional identities are constituted. The understanding of this professional identity construction in relation to professional development for online teaching

can benefit researchers and practitioners because it enables deductions to be made regarding the design features of professional development. The feeling of connectivity, which entails interaction and mutual recognition between the participants, was shown to be one of the feelings reported (Bills et al., 2016; Chen, 2016). Given that feelings shape a person's professional identity (Saunders, 2013), this can lead to the tentative conclusion that social interaction and a positive social presence should be acknowledged as an important design feature in the creation of professional development programs that target online and blended teaching.

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## **Chapter four: Developing and validating a scale to measure institutional support for online and blended learning<sup>4</sup>**

### **Introduction**

Nowadays, information and communication technologies (ICT) offer teachers a wide range of possibilities regarding their teaching practices due to a strong relationship between education and technology (Laurillard, 2012). Although some technological innovations were developed specifically for education, most of them were not. Nonetheless, some of them were adopted by educators and were adapted to use in an educational context (Salmon, 2011). The increase of online or blended courses that followed on the integration of ICT in education (Means, Toyama, Murphy, & Baki, 2013) not only requires teacher professional development (Salmon, 2011), but also comprises the need for institutional support on all educational levels (Almpanis, 2015). Unfortunately, the current literature lacks instruments that measure teachers' perceptions of institutional support for OBL. There are however some papers which report on the perceptions of institutional support, although they often relate to general themes such as academic performance or faculty interactions (e.g., Lee & Matusovich, 2015). Studies that focus on the institutional support offered for online teaching hardly validate the measures used to indicate the support (e.g., Elliott, Rhoades, Jackson, & Mandernach, 2015; Lion & Stark, 2010). This is somehow surprising because valid measures are needed because institutional decisions may often be based on teachers' perceptions of certain matters (Ingersoll, Sirinides, & Dougherty, 2018). This paper reports on the development and validation of an instrument that targets this gap and thus contributes to the knowledge basis on what constitutes good institutional support for teaching in online or blended environments.

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<sup>4</sup> Adapted from: Philipsen, B., Tondeur, J., Scherer, R., Pynoo, B., & Zhu, C. *Institutional support for online and blended learning: Developing and validating an instrument to examine the perceptions of teachers*. Submitted for review with the *International Review for Research in Open and Distributed Learning*

## **Theoretical Background**

### **Institutional support for OBL**

The pivotal role of institutional support for the implementation and sustainability of OBL already received great matters of attention in contemporary research (e.g., Arinto, 2013; Farmer & Ramsdale, 2016; McGee et al., 2017). The institution-wide approach towards OBL can often either create or diminish barriers for teachers to implement or uphold online teaching activities (Fetzner, 2003; Orr, Williams, & Pennington, 2009; Watson & McIntyre, 2012). Institutional support can comprise many different smaller sub-features that in some way contribute to or impede teachers' engagement and motivation towards online teaching (McGee et al., 2017). Some align institutional support with the responsibility of providing the necessary infrastructure (Marek, 2009) by, for example, investing in decent Wi-Fi or a sufficiently large bandwidth (Philipsen, Tondeur, & Zhu, 2016). Others approach institutional support more from a cultural point of view, which relates to the fact that online teaching is supported and accepted by the teaching staff (Gregory & Salmon, 2013; Philipsen, Tondeur, & Zhu, 2016). One could state that in general you have on one side the more physical, infrastructural-related approaches (e.g. Marek, 2009) that focus on having the right equipment and tools, and on the other side the more personal approaches like creating an receptive culture towards online and blended teaching. An example of the latter could be that institutional support is viewed as striving towards leadership that positively affects teachers' acceptance of online or blended teaching (Cowan, 2013).

However, the main tendency remains that institutional support largely affects how online, and by extent also blended, courses are designed, implemented and sustained (McGee et al., 2017; Nihuka & Voogt, 2012). It remains unfortunately unclear whether or not institutions also actually meet the needs of the teachers (McGee et al., 2017). Thus, while various studies were undertaken to examine the required competencies for online teaching (Arinto, 2013; Farmer & Ramsdale, 2016), or which institutional support services are perceived as important for teaching online (Almpanis, 2015; McGee et al., 2017), only few focus on whether teachers' institutional needs pertaining to teaching online are actually met. This raises questions about what teachers actually experience as important when it comes to OBL.

The study of Philipsen, Tondeur, Pareja Roblin, Vanslambrouck and Zhu (2019) examined which specific features of professional development trajectories were positively valued by teachers as in that they contributed to a successful professional development experience. Based on a meta-aggregative analysis of 15 professional development papers that targeted OBL, 6 synthesised findings were constructed (Philipsen et al., 2019). The synthesised findings entail a) to design a supportive teacher professional development program for OBL, b) to determine clear goals and objectives towards OBL, c) to acknowledge existing contexts towards OBL, d) to address teacher change associated with transitioning to OBL, e) to acknowledge professional development strategies related to the transition towards OBL, and finally f) to disseminate and evaluate the professional development program that targets OBL (Philipsen et al., 2019). Based on these synthesised findings we constructed our first preliminary set of items that formed the base of our instrument.

### **Purpose of the study**

A successful implementation of OBL requires an institution-wide approach (Almpanis, 2015; McGee et al., 2017). Therefore, it would be interesting to have an instrument that examines the extent of institutional support for OBL. Additionally, it remains unclear if institutions provide the adequate necessities to reach teachers' needs pertaining to teach online (McGee et al., 2017). As the present study is aimed at providing and examining evidence for the validity of a newly developed measure of teachers' perceived support for OBL, the following research questions are addressed:

- e) To what extent are the items measuring the perceived support OBL homogeneous? (*Internal consistency*)
- f) Which factor structure does the new measure of teachers' perceived support in OBL show? (*Factor structure*)
- g) To what extent does the identified factor structure show invariance across gender groups? (*Measurement invariance*)
- h) To what extent are teachers' perceptions of institutional support correlated with other constructs, including TPACK self-efficacy, age, and teaching experience? (*Relations to other constructs*)

First, we examine the extent to which the newly developed scale is internally consistent, that is, reliable (RQ 1). Research questions 2-4 further address the factor structure, the gender invariance, and the relations to other relevant constructs. These questions are aimed at providing evidence for the validity of the scores resulting from the new measure (Kane, 2013).

## Methodology

### Sample

The participants for this study are 317 teachers (65.6 % female) who are employed in context of the Flemish adult education and training. They received an invitation to participate in an online survey via email and were sent a link to the survey. Most of the participants held a master's degree ( $n = 192$ ; 60.6 %), as shown in Table 1. Table 1 presents the means, standard deviations, and the ranges for participants' age, their total years of experience in education, and the total years of experience in OBL.

Table 1. Means, standard deviations, and the ranges for participants' age, their total years of experience in education, and the total years of experience in OBL.

	Age [years]	Experience in education [years]	Experience in online or blended learning [years]
Mean	43.46	14.21	2.65
Std. deviation	10.27	9.92	3.48
Range	41.0	38.0	20.0
Minimum	23.0	0.5	0.0
Maximum	64.0	39.0	20.0

### Instrument development

A new instrument was designed and developed which was based on the results of the meta-aggregative study on teacher professional development for online and blended learning by Philipsen et al. (2019). The development of the instrument was based on the research procedure for scale development by Gall, Gall, and Borg (2007), and Lee and Seomun (2016). This development process consisted of three distinct phases, namely: the concept analysis, the scale development, and finally the psychometric evaluation (Lee & Seomun, 2016). The instrument aims to capture the Institutional Support for Online and Blended Learning (ISOBL).

**Phase 1: Concept analysis.** The first phase entails three subparts, namely a theoretical, a fieldwork, and finally an analytical approach. In our theoretical approach we started by defining the construct of interest (Gall et al., 2007): institutional support for teaching online. We subsequently selected our target population (Gall et al., 2007) which were adult educators in the context of Flemish adult and vocational education. We checked four main databases – Web of Science, ERIC, Google Scholar, and PsycInfo – for existing surveys and literature (Gall et al., 2007) and concluded in accordance with McGee et al. (2017) that it remains unclear whether or not teachers' institutional needs are met when it comes to teachers who are teaching online. Therefore, we conducted a literature review on teachers' professional development for OBL, and more particularly focused on the importance of institutional support for the integration or use of OBL. This review was done to conceptualise the aim and focus of this study (Lee & Seomun, 2016). The main database used was the ISI Web of Science, but others like Google Scholar, PsycInfo and ERIC were also explored. Abstracts were scanned and for the articles deemed appropriate a full text was sought. Only literature (reviews, journal articles, conference papers and books) in English was included.

To orientate ourselves better to the problem we then held a fieldwork phase with interviews (Lee & Seomun, 2016) with seven adult education centre leaders and employees. They were asked about the possible usefulness and value of an instrument that measured adult educators' perceptions of offered institutional support for teaching online. The general trend was an unequivocal positive answer from all of the seven stakeholders and their advice was taken into consideration for further development of the instrument. To illustrate, they gave us valuable information on how to formulate our items in terminology used in adult education centres. Hence the literature study and the fieldwork phase guided our concept analysis and helped us

finetune our construct of interest. In the analytical part, the last part of the first phase by Lee and Seomun (2016), we derived our first set of items from the analysis done by Philipsen et al. (2019). Their six synthesised findings formed the foundation of our first initial set of eight items, which form the first prototype of our survey instrument (Gall et al., 2007).

**Phase 2: Scale development.** The second phase, the scale development, consists of three parts: namely the selection of the preliminary items based on the analytical part from phase one, a content validity examination with a panel of experts, and finally a revision of the scale and an identification and selection of the final items (Lee & Seomun, 2016). The items stem from a previous qualitative study done by Philipsen et al. (2019). Philipsen et al. (2019) did a systematic meta-aggregative review study of 15 qualitative or mixed methods studies and distilled 6 action recommendations. Based on these 6 action recommendations, 8 items were constructed. Some action recommendations were split into more than one item, because they targeted more than one subject at the same time. To illustrate: Philipsen et al. (2019) distilled evaluation and dissemination as one category within their action recommendations. This category is in this paper reconstructed into two items, as can be seen in Table 1. The 8 items were then presented to a panel of experts to check their clarity and usefulness (Lee & Seomun, 2016). The content validity will be examined by calculating an item-level content validity index (Pollit & Beck, 2006; Pollit, Beck, & Owen, 2007) by making use of a four-point ordinal rating scale (*1 = irrelevant, 2 = unable to assess without item revision, 3 = relevant with minor alterations, 4 = extremely relevant*).

The content validity index was chosen because even though it could need improvement for chance agreement, it still shows considerable advantages as regards ease of calculating, the focus on agreement of relevance and understandability (Pollit et al., 2007). Items which score on average below 3 are excluded. The panel of four experts consisted of two adult educators with academic research experiences, one academic project coordinator affiliated with OBL and one adult education programme coordinator. This seems to be a suitable sample size for a content validity expert panel (Pollit et al., 2007). None of the 8 initial items needed to be excluded, yet suggestions were given on sentence construction and clarity. The process of scale development ended with a set of eight final items (Lee & Seomun, 2016), reformulated if necessary based on the panel of experts' advice (Gall et al., 2007).

**Phase 3: Psychometric evaluation.** The last phase comprised collecting data to evaluate the psychometric properties of the new measure (Gall et al., 2007; Lee & Seomun, 2016). This evaluation contained the examination of both reliability and validity. First, we estimated the internal consistency to evaluate the homogeneity of items (RQ 1). Besides Cronbach's  $\alpha$ , we also calculated the more sensible index of McDonald's  $\omega$ . The latter does not rely on the strict assumptions Cronbach's  $\alpha$  relies on—assumptions that are hardly met in reality (Cho & Kim, 2015; Dunn, Baguley, & Brunsden, 2013). Second, we tested the factor structure of the newly developed measure using both exploratory and confirmatory factor analysis (RQ 2). Exploratory factor analysis (EFA) was applied using a principal axis factoring (PAF), which was supplemented by the correlation matrix, the Kaiser-Meyer-Olkin measure of sampling with the Bartlett's test of sphericity, and the communalities (Neill, 2008). To determine the number of factors underlying the new measure, we examined the eigenvalues, determined how many eigenvalues larger than 1 existed (Kaiser criterion), and how much variance could be explained by these factors. Given that the Kaiser criterion, as an absolute criterion, oftentimes suggests more factors than empirically supported, we further supplemented its application by an empirical Kaiser criterion (Braeken & van Assen, 2017).

We further substantiated the identified factor structure by confirmatory factor analyses (CFA) and model fit evaluation. Given that the distributions of item responses may depart from normality, we chose to perform robust maximum likelihood estimation (MLR) and corrections of model fit indices which were based on  $\chi^2$  values (Satorra & Bentler, 2010). Besides, possible item dependencies beyond the identified factors were modelled using residual correlations. These dependencies may have been due to similar item formulations or similar, underlying concepts. In case that such dependencies occurred, models with and without residual correlations were compared using model fit statistics and  $\chi^2$  difference testing. Overall, the fit of a CFA model was considered reasonable if the Comparative Fit Index (CFI) was at least .90, the Root Mean Square Error of Approximation (RMSEA) as less than .08, and the Standardized Root Mean Residual (SRMR) was less than .10 (e.g., Hu & Bentler, 1999; Marsh, Hau, & Grayson, 2005). However, we did not consider these guidelines as “golden rules” because they depend on several factors, including sample sizes, the magnitude of factor loadings, and the type of factor model applied to the data (Greiff & Heene, 2017).



Next, we tested whether the identified factor structure was invariant across gender groups by means of multi-group CFA. We specified a series of models with different constraints of model parameters across groups: The first model assumed that the factor structure is set up in the same way across gender groups (i.e., the same number of factors, existing residual correlations, and the assignment of items to factors). This model is referred to as the configural model and represents pattern invariance as it indicates “whether or not the same items measure [a] construct across administrations” (Bialosiewicz, Murphy, & Berry, 2013, p. 6). The second model adds the constraint of equal factor loadings across groups to the configural model (metric model). The third model assumes equal item intercepts (i.e., item means) across groups in addition to the metric invariance model (scalar invariance). This level of measurement invariance is needed to ensure that group comparisons of factor means are valid. Finally, we specified a model that assumed scalar invariance and equal factor means to test whether female and male adult educators have the same perceptions of institutional support (factor means model). We compared these models in terms of model fit differences ( $\chi^2$  difference testing,  $\Delta$ CFI, and  $\Delta$ RMSEA) and considered possible differences irrelevant if (a) the  $\chi^2$  difference test was insignificant ( $p > .05$ ), (b)  $\Delta$ CFI  $< .010$ , (c)  $\Delta$ RMSEA  $< .015$ , (d)  $\Delta$ SRMR  $< .030$  (Chen, 2007). As noted earlier, these guidelines do not represent strict rules.

Finally, we addressed RQ 4 by examining the correlations between the proposed constructs and the perceived institutional support scale. Confirmatory factor analyses were conducted using the R package *lavaan* version 0.5-23.1097 (Rosseel, 2012); exploratory factor analyses were conducted in *SPSS 24.0*.

### **The resultant scale (ISOBL)**

The item development process resulted in eight items which underwent further, psychometric analyses (see 3.2.3). Participants were asked to indicate their agreement with each item on a five-point Likert scale (*1 = Completely disagree, 2 = Agree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Completely agree*). Item wordings are presented in Table 2.

Table 2: Item wordings ISOBL scale

Final set of 8 items	
In our institution ...	
1.	there is a clear vision towards OBL.
2.	there is a supportive environment as regards professional development for OBL.
3.	we have clear objectives as regards OBL.
4.	we take into account the current ICT-possibilities and infrastructure as regards OBL.
5.	we pay attention to the change processes of the teacher that are inherent to the change from face-to-face to online or blended learning.
6.	there is a professional development strategy towards OBL.
7.	we systematically share information about professional development trajectories.
8.	we evaluate professional development trajectories.

### TPACK self-efficacy

TPACK self-efficacy was measured by 21 items which had been validated in a previous study (Scherer, Tondeur, & Siddiq, 2017). Participants were asked to score their TPACK self-efficacy on a five-point Likert scale (from *1 = I completely disagree* to *5 = I completely agree*). The overall reliability of this scale was  $\alpha = .897$ ,  $\omega = .980$ . This scale was best represented by a general factor and a construct-irrelevant specific factor—hence, the TPACK self-efficacy measure followed a nested-factor structure,  $\chi^2(173) = 503.4$ ,  $p < .001$ , CFI = .932, RMSEA = .089, SRMR = .034. Table 3 presents the item wordings of the TPACK-scale (Scherer, Tondeur, & Siddiq, 2017).

Table 3. Item wordings TPACK scale

Item	Wording
<b>Technological Content Knowledge</b>	
TCK1	<i>I am aware of ICT applications that I can use to give students insight into the subject I teach.</i>

- TCK2 *I am aware of ICT applications to support the subject I teach.*
- TCK3 *I can choose ICT applications that support lessons in a subject domain.*
- TCK4 *I know how to use ICT applications to present concepts from a discipline in a different way to my students.*

### **Technological Pedagogical Knowledge**

- TPK1 *I can choose technologies that enhance students' learning for a lesson.*
- TPK2 *I can choose technologies that enhance the teaching approaches for a lesson.*
- TPK3 *I can adapt the use of the technologies that I am learning about to different teaching activities.*
- TPK4 *I am thinking critically about how to use technology in my classroom.*
- TPK5 *My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.*

### **Technological Pedagogical Content Knowledge**

- TPCK1 *I can teach lessons that appropriately combine technologies, literacy, and teaching approaches*
- TPCK2 *I can use strategies that I have learned (in my teacher education program) to combine ICT, content, and pedagogy.*
- TPCK3 *I can choose ICT applications that enhance what and how I teach.*
- TPCK4 *I can choose ICT applications for a subject domain that enhance what and how I teach.*
- TPCK5 *I can give lessons about a subject area that appropriately integrate ICT, content, and teaching approaches.*

### **Technological Knowledge**

- TK1 *I know how to solve my own technical problems.*
- TK2 *I can learn technology easily.*
- TK3 *I keep up with important new technologies.*
- TK4 *I frequently play around with the technology.*
- TK5 *I know a lot about different technologies*

TK6	<i>I have the technical skills I need to use technology.</i>
TK7	<i>I have had sufficient opportunities to work with different technologies.</i>

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## Results

### Descriptive statistics and internal consistency (RQ 1)

The descriptive statistics of the eight items aimed at measuring teachers' perceptions of institutional support for OBL are shown in Table 4. Overall, teachers' perceptions were distributed around their mean and showed variability across teachers. Indices for skewness and kurtosis indicated only marginal deviations from normal distributions. Neither ceiling nor floor effects were apparent.

Table 4: Descriptives ISOBL scale

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
In our institution ...				
1. there is a clear vision towards OBL.	3.18	1.05	-0.12	-0.57
2. there is a supportive environment as regards professional development for OBL.	3.21	1.07	-0.31	-0.58
3. we have clear objectives as regards OBL.	3.07	1.02	-0.09	-0.63
4. we take into account the current ICT-possibilities and infrastructure as regards OBL.	3.29	1.01	-0.33	-0.44
5. we pay attention to the change processes of the teacher that are inherent to the change from face-to-face to online or blended learning.	2.98	0.98	-0.13	-0.29

6. there is a professional development strategy towards OBL.	3.02	1.03	-0.05	-0.50
7. we systematically share information about professional development trajectories.	3.00	0.99	-0.21	-0.52
8. we evaluate professional development trajectories.	2.90	0.92	-0.23	-0.21

---

A first step done in this process of psychometric evaluation is the calculation of Cronbach's  $\alpha$  to measure the internal consistency, or in other words how close these items are related to each other as a group (Tavakol & Dennick, 2011). The internal consistency of the entire scale was excellent, Cronbach's  $\alpha = .92$  (George & Mallery, 2013). It remains however a property of specific respondents' scores in our administered survey, which entails that every time the survey is used, the Cronbach's  $\alpha$  should be calculated over again (Tavakol & Dennick, 2011). Next to Cronbach's  $\alpha$ , McDonald's  $\omega$  supported the excellent reliability of the instrument,  $\omega = .95$ .

### Factor structure (RQ 2)

Next, we tested the factor structure of the eight-item scale using EFA. Table 5 presents the underlying correlation matrix. The results showed that all eight items correlated substantially, with correlations above .45. This observation indicates that the eight items share common variance—a prerequisite for their factorability. The Kaiser-Meyer-Olkin measure of sampling adequacy was .912, and Bartlett's test of sphericity was significant,  $\chi^2(28) = 1664.9, p < .001$ . These findings suggest that some proportion of variance could be caused by an underlying factor structure and that it would be worthwhile performing a factor analysis.

Finally, the communalities ranged between 0.51 and 0.67, indicating that each item shares some common variance with the other items (Neill, 2008). These three indicators suggest that the eight items are indeed suitable for a factor analysis (Neill, 2008). Moreover, the sample size was sufficient to perform a factor analysis (Pearson & Mundfrom, 2010; Thompson, 2004).

Table 5. Underlying correlation matrix.

Correlations	1	2	3	4	5	6	7	8
Item 1	1.000							
Item 2	.683	1.000						
Item 3	.743	.707	1.000					
Item 4	.611	.645	.604	1.000				
Item 5	.523	.604	.591	.572	1.000			
Item 6	.665	.691	.697	.610	.704	1.000		
Item 7	.505	.546	.510	.450	.512	.676	1.000	
Item 8	.484	.453	.514	.442	.575	.613	.645	1.000

Note. All correlations were statistically significant ( $p < .05$ ).

The principle axis factoring with an oblimin rotation indicated that the first factor explained approximately 65% of the total variance (Table 6), and it was the only factor with an eigenvalue above 1. Varimax rotation resulted in exactly the same output. Besides, the Empirical Kaiser Criterion for the set of eigenvalues was 1.343 for the first eigenvalue and 1.000 for all subsequent eigenvalues. All of these results suggest unidimensionality of the newly developed scale and provide evidence that one factor may be sufficient to describe its structure.

Table 6. Total variance explained

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.161	64.518	64.518	4.772	59.652	59.652
2	.798	9.976	74.494			
3	.501	6.267	80.761			
4	.410	5.130	85.891			

5	.391	4.885	90.776
6	.277	3.460	94.236
7	.245	3.061	97.297
8	.216	2.703	100.00

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Next, we performed CFA to further substantiate previous findings on the factor structure of the new measure, specifying a series of models. Although EFA suggested a one-factor structure representing the eight-items scale, this finding does not provide evidence that this is the best structure to represent the data—in fact, residual correlations due to item dependencies may occur. These correlations were not uncovered by EFA.

The first CFA model assumed a single factor without any further model parameters. This model fitted the data reasonably well,  $\chi^2(20) = 145.2, p < .001$ , CFI = .930, RMSEA = .110, SRMR = .046. However, the RMSEA could be deemed too high in comparison to the generally accepted cut-off values. We therefore examined the modification indices and identified strong relations between the first and the third item (mod index = 30.696), and between the seventh and the eighth item (mod index = 41.838). These dependencies may be due to the fact that these pairs of items deal with similar content: The first and the third item comprise respectively the vision and objectives towards OBL. The seventh and the eighth item comprise respectively the sharing and evaluation of professional development trajectories. We therefore re-ran the initial, one-factor model and added residual correlations between items 1 and 3, and 7 and 8. The resultant model fitted the data well,  $\chi^2(18) = 77.4, p < .001$ , CFI = .969, RMSEA = .094, SRMR = .032. In fact, comparing this model with the initial model by means of  $\chi^2$  difference testing suggested a significant improvement in model fit,  $\Delta\chi^2(2) = 38.5, p < .001$ . Hence, the factor structure of the newly developed scale is represented by a single factor and two residual correlations.

### **Measurement invariance across gender groups (RQ 3)**

Having established a factor structure of the measure (RQ 2), we examined its invariance across gender groups as a next step. Testing for measurement invariance involved four multi-group

CFA models (i.e., configural, metric, scalar, and factor means invariance models). The fit statistics and model comparisons among these four models are shown in Tables 7 and 8.

Table 7: Fit statistics

<i>Invariance model</i>	$\chi^2$	<i>df</i>	CFI	RMSEA	SRMR
Configural	98.496	36	0.971	0.075	0.036
Metric	116.793	43	0.961	0.079	0.065
Scalar	127.334	50	0.957	0.077	0.066
Factor means	134.262	51	0.953	0.080	0.083

Table 8. Model comparisons

<i>Invariance model</i>	$\Delta$ CFI	$\Delta$ RMSEA	$\Delta$ SRMR	$\Delta\chi^2$	$\Delta$ df	<i>p</i> -value
Configural	-	-	-	-	-	-
Metric	-0.010	+0.004	+0.029	19.9	7	0.005815**
Scalar	-0.004	-0.002	+0.001	10.6	7	0.156189
Factor means	-0.004	+0.003	+0.017	6.4	1	0.011692*

*Note.* The table shows the robust fit indices. \*  $p < .05$ , \*\*  $p < .01$

Overall, all invariance models showed acceptable model fit statistics. However, model fit deteriorated when adding further constraints to the configural model. Considering how much model fit decreased (Table 6), it can be concluded that either metric or scalar invariance across gender groups holds. We notice once more that the suggested cut-off values are never to be seen as golden rules or strict standards. Given that the factor model representing perceived support contains two residual correlations next to a single factor, the complexity of this model may allow the application of less restrictive cut-off values (Khojasteh & Lo, 2015). In addition, changes in the SRMR below .030 are considered acceptable primarily when testing metric rather than scalar invariance (Chen, 2007). Overall, we interpret the changes in model fit in the series of invariance models as indicative of at least metric invariance.



When it is assumed that the factor loadings, intercepts, and the factor means are equal for men and women, the model fit deteriorates. This suggests that men and women perceive levels of institutional support for OBL significantly differently. However, we do not report these differences here, because we do not have sufficient evidence that scalar invariance, the prerequisite for examining factor means, is met.

#### **Relations to other constructs (RQ 4)**

Finally, we examined the relations between the newly developed scale and three other constructs: TPACK self-efficacy, age, and teaching experience. The correlation between TPACK self-efficacy and the perceived institutional support for OBL was positive and statistically significant,  $\rho = .46, p < .001$ . This suggests that when the participants attribute a higher score to their TPACK competences, they also indicate that they perceive more institutional support. The correlations with age and teaching experience were both negative yet significant (age:  $r = -.14, p < .05$ ; teaching experience:  $r = -.17, p < .01$ ). This suggests that older and more experienced teachers are more likely to perceive less institutional support with regards to OBL.

### **Discussion**

Based on the provided descriptive statistics it can be stated that the participants generally perceive the institutional support related to acknowledging current infrastructural traits to be the most present. The lowest ones are the perceived evaluation steps as regards professional development and the perceived attention towards teachers change processes inherent to the change to OBL. This could thus suggest that teachers perceive that they receive the most support on the infrastructure for teaching in OBL environments. The psychological change that is inherent to changing to teaching online (Wang, Chen, & Levy, 2010) gets one of the lowest scores by the participants. This implies that there is still a lot of room for improvement in supporting teachers' change processes inherent to the transition from face-to-face to OBL environments. This is however not the main aim of this study. Thus, whilst acknowledging that there is much more to be examined with regard to teachers' current perception of institutional support that targets OBL, this paper will now continue with the discussion on the results of the validation steps done for the ISOBL scale.

The EFA and CFA suggested that there could be a latent variable underlying the proposed 8 items as presented in Table 1. While the reliability analyses such as Cronbach's Alpha and McDonald's Omega showed a good reliability, it still has to be stressed that these results were obtained in a specific context and it is advised to always recalculate both measures in a pilot sample prior to using the presented instrument (Tavakol & Dennick, 2011). Nevertheless, it remains promising that the presented ISOBL instrument had such high reliability scores, suggesting a close relationship between the eight items (Tavakol & Dennick, 2011). The correlation matrix, the Kaiser-Meyer-Olkin measure of sampling with the Bartlett's test of sphericity, and finally the communalities suggested that the eight items could be deemed suitable for a factor analysis (Neill, 2008), and later results indeed showed an underlying factor structure that explained approximately 65 % of the variance (see Figure 1). In order to see whether or not allowing residual correlations would improve the model an ANOVA analysis was done by comparing a model with and without residual correlations. This was done because modification indices showed high scores between several items, and the model allowing these correlations fitted significantly better than the one without. Hence, in all further steps these residual correlations were allowed. Again, it has to be stressed that these results are dependent on inter alia how data is treated, the sample size and the number of expected or extracted factors. Hence, while this study has reasons to assume that there is indeed one underlying latent variable that could encapsulate the 8 proposed items from Table 1, further research can still re-examine the proposed scale. It might be that omitting certain items, which was deemed unnecessary in the current study due to positive item-level content validity index (Pollit & Beck, 2006; Pollit, Beck, & Owen, 2007), leads to a different result.

The last part of this discussion targets the correlations against other constructs (e.g. TPACK) and the group invariance measurement. The results suggest that when the participants score their TPACK self-efficacy higher, they also indicate a higher degree of perceived institutional support for OBL. This result aligns with our expectations because we assumed a positive correlation between those two constructs. It was expected that if teachers score their TPACK-self efficacy higher, that they also perceive a higher degree of institutional support. Hence, this confirmed expectation tentatively adds validity to our scale, because the expected positive correlation was shown in the results. As regards the group invariance measurement, this study indicates that the proposed scale works equally well for women and men, it also suggests that women and men perceive the received institutional support for OBL different. The generally

positive results on CFI, TLI and SRMR scores (Byrne, 2012) shape a tentative positive image of the validity structure of the presented scale in this paper. However, RMSEA showed to be troublesome throughout the whole process. Allowing residual correlations and using MLR methods improved the score in some ways, yet it remains an important feature to keep in mind. Further research could examine on how this score could be improved, without inversely affecting CFI, TLI and SRMR. It is however still the case that ‘significance’ is in the eye of the beholder, and one has to question the weight given to one specific part of model fit indices in scale validity studies.

## **Conclusion**

In summary, the goal of the presented paper was to validate a scale that targets teachers’ perceptions of institutional support for OBL and/or teaching. Based on the presented results this study assumes that the proposed ISOBL scale can be used, if it is used with the required rigor and accuracy that are an inherent part of scale validity research. This entails retesting its reliability (Tavakol & Dennick, 2011) and preferably several different model fit approaches every time the scale is used. The presented scale can thus be used to examine how teachers are perceiving the institutional support when it comes to OBL. This not only entails possible academic advantages such as examining relationships with other variables (e.g. age or teaching experience), but also practical advantages. If school leaders, program coordinators or policy staff are aware of how teachers perceive the institutional support, they can design and develop strategies to identify the strong points and those in need of improvement (e.g. vision development or infrastructural advancements). Yet, most of all, the presented scale could be a promising indicator of how well OBL is implemented and subsequently perceived within an institution by those who are confronted with it on a daily base, the teachers.

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## General discussion<sup>5</sup>

This dissertation's main aim was to enhance the quality of online and blended learning in adult education and training. This was tackled from the perspective of teacher professional development (TPD) for online and blended learning (OBL). This is based on the premise that TPD can increase the quality of education (Darling-Hammond et al., 2017; Ehlers, 2009; Guskey, 2002). This main aim was divided into three aspects of TPD for OBL. These are not the only aspects at play in assuring quality in OBL courses, thus we strongly acknowledge other aspects such as contextual conditions and policy. The examined aspects were: TPD programmes for OBL, the teacher, and the institution. Thus, by targeting those three aspects we aim to add to the knowledge on TPD for OBL in such a way that it might elicit a higher quality of online and blended courses. The dissertation started with an introduction to adult education and how OBL could be used as a possible way to answer adult learners' need for flexible courses and to facilitate their self-directedness (Knowles et al., 2015; Rosen & Stewart, 2015). However, teachers still need to be trained for teaching in online or blended learning environments (Salmon, 2011; Stavredes, 2011; Redmond, 2011), which was the main focus of this dissertation (i.e. TPD for OBL). Throughout this discussion we will look back at each main objective of each chapter, with a brief overview of methods and results. Subsequently, this discussion will continue and highlight three key-elements of teacher professional development for OBL that resulted out of the four chapters, namely: professional identity, digital capital and

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<sup>5</sup> *Parts of this discussion are adapted from: Philipsen, B., Tondeur, J., Pynoo, B., & Cocquyt, C., & Zhu, C. A teacher professional development process model for online and blended learning: A concept paper. Submitted for review with the journal of Contemporary Issues in Technology and Teacher Education*

institutional support for OBL. Additionally, final conclusions are given, followed by this dissertation's limitations and recommendations for policy and practice.

### **Brief overview of the four chapters: aim, methods and results**

The first chapter aimed to provide an overview of specific important components of teacher professional development that targets online and blended learning. The main objective of the first chapter was to identify important components of TPD for OBL. The study at the base of the first chapter resulted in a framework that presents six synthesised findings which represent the important components of TPD for OBL. The leading research question was: Which components are important for a TPD strategy that targets online and blended learning? A systematic meta-aggregative review revealed six synthesised findings that can be deemed as the important components of a TPD that targets OBL. The synthesised findings were: The design and development of a supportive TPD for OBL programme and environment; The acknowledgement of the existing context towards OBL; Addressing teacher change associated with the transition to OBL; The determination of the overall goals and relevance of the TPD for OBL; The acknowledgement of teacher professional development strategies associated with the change to OBL; The evaluation of the TPD and the dissemination of the new knowledge, skills, and attitudes.

In preparation of the first study, it was noticeable that teacher professional development for online and blended learning is often interchangeably used with online teacher professional development. With respect to this, the second chapter presents a case study to shed light on the differences of TPD for OBL and online TPD. Chapter two presents an existing online professional development, which has as a subject learning to teach online. The second chapter's main objective was to examine an existing online TPD programme for OBL and to look at how the online components were being experienced by the coaches and the participating teachers. The possible differences between the coaches' and participants' experiences were examined and whether or not the online features of the training programme affected those experiences. A thematic analysis revealed that online features can instigate both negative and positive experiences. Five commonly shared main themes were identified between the coaches' and the participants' experiences after the training programme, namely: They highlighted the crucial role of context for online teaching; They experienced a heightened didactical reflection on the

reasoning underlying online teaching; They noticed an influence on their self-confidence; They stated the importance of online professional and peer support and finally; They developed a sense of critical awareness on online teaching.

The third chapter presented a teacher professional development programme for online and blended teaching that was co-constructed and subsequently analysed. Additionally, the study at the base of this chapter focuses on how teachers live through a professional development programme. The main objective was to identify teachers' feelings during a TPD programme for OBL. The main research question was: How do the participants in a teacher professional development programme, that targets online and blended teaching, feel during the professional development process? Based on a hermeneutic phenomenological study, five main feelings became apparent: They experienced feelings of chaos, connectivity, satisfaction, responsibility, and frustration.

While chapter one, two and three mainly focused on the professional development components, chapter four examines the institutional support required, if online components are to be truly successfully implemented (Almpanis, 2015). To our knowledge, there is no validated instrument that measures teachers' perceptions of institutional support for online and blended learning. Hence, the fourth chapter targets the development and validation of an instrument that targets teachers' perceptions of institutional support for teaching in online or blended environments. The main objective was to develop and validate a scale that measures teachers' perception of institutional support for online and blended learning. The result was the validated ISOBL scale. Based on the identified results, this dissertation assumes that the proposed ISOBL scale can be used.

### **Addressing the main aim of this dissertation**

The main aim was to enhance the quality of online and blended learning in adult education and training. This dissertation addresses that aim in three ways. First, it provides a framework – chapter one – that clearly represents the important components of TPD for OBL. These are definitely not the only components, hence it is not presented as a golden standard. However, the components can guide the design of TPD for OBL programmes. Based on the view that TPD can increase the quality of education (Darling-Hammond et al., 2017; Ehlers, 2009;

Guskey, 2002), it might therefore enrich the quality of online and blended courses. When a TPD for OBL programme is designed, the components of our proposed framework can be of inspiration for trainers or developers. To illustrate, they might integrate a workshop on teachers' change processes inherent to the transition to OBL. A psychological change process that is often neglected (Wang et al., 2010). Thus, by using the framework as a guideline, trainers or developers might get reminded about these change processes. Next to that, if we implement contemporary advice on TPD programmes we cannot neglect informal approaches to professional development (Darling-Hammond et al., 2017; Evans, 2018). In this respect school management can be sensitised to discuss this informal approach with their staff to motivate them to work towards a professional learning community wherein teachers extensively share experiences (Little & Horn, 2010). If teachers share more about their teaching practices with their colleagues (Little & Horn, 2010), then this might affect their professional learning on the spot (Evans, 2018). Which we elaborate to sharing online teaching practices. This is aligned with one of the main synthesised findings of the first chapter, namely to disseminate knowledge, skills and attitudes within one's own professional network. Thus, this dissertation can add to the main aim – enhancing the quality of online and blended learning in adult education – by sensitising school management to motivate their staff to share their experiences with online and blended learning.

Second, the proposed ISOBL scale can add to the main aim in several ways. To start, the study at the base of chapter four identified several key-elements of the current state of online and blended learning in the Flemish adult education. To illustrate, one of the least enacted roles of teachers in online environments is the instructional role (Philipsen et al., 2017). Furthermore, teachers also indicated a low score for perceived institutional support regarding their change processes related to teaching in OBL. Hence, for policymakers and school management these results can be an instigator of professional development initiatives. The results of the survey – which was done in the study at the base of chapter four – can therefore be a guideline for professional development subjects.

Third, based on chapter three we now have an idea on how teachers process through the experience of professional development for OBL. If we would further examine the underlying reasons as to why positive and negative feelings are being experienced, then this could inform future TPD programmes but it could also illuminate possible thresholds or stimulators

regarding implementing online and blended learning. If school management or policy can better understand those thresholds and stimulators, then they can specifically target future directions of online and blended learning. The quality of online and blended learning can then be improved because if general directions of quality improvements are understood and decided on and based on known thresholds and stimulators for the use of OBL; then specific supportive measures can be developed or encouraged to enhance the use of OBL. An example could be providing more teacher-hours to institutions to co-develop with external partners specific online learning paths.

### **Relationship between the four chapters**

The chapters discussed in this dissertation are study-wise presented as single cases, yet they relate to one another. The first chapter relates to the other three chapters due to the fact that chapter two, three and four all highlight a specific component that is already included in the framework of chapter one. To illustrate, chapter four highlighted that teachers indicate a low level of perceived institutional support as regards their change processes related to teaching in OBL. These change processes are one of the synthesised findings of chapter one. The same goes for the results presented in chapter two. The themes that are highlighted in that chapter relate strongly to the identified important components of TPD for OBL. Thus, in essence we can say that in a first way the chapters are related to each other because they all highlight important components of TPD for OBL.

Secondly, chapter two and three relate to each other because in the second chapter we advocated for an adaptation of the Lawless and Pellegrino (2007). The suggestion was to also use TPD programme experiences as a unit of analysis for TPD programmes. This is also aligned with what Evans (2014) suggests as seeing teacher change and their experiences with TPD programmes as a justifiable end of TPD. Hence, in study three we solely focused on how teachers lived through a TPD for OBL programme and we aimed to capture their experiences by looking at their feelings during the programme. The third chapter also relates to chapter one and two because it aims to further understand teachers' professional identity. In chapter one and two it is argued that teachers' professional identity may distinguish TPD for OBL from other approaches, because it appears to get a more pivotal role in TPD for OBL. The fact that chapter three targets the understanding of that professional identity by looking at their feelings

(O'Connor, 2008) is in fact an elaboration of the statements in chapter one and two on the importance of teachers' professional identity.

Third, chapter two and four are related to each other because in chapter two it is highlighted that both the coaches and the participants – of the study underpinning chapter two – state that one cannot neglect the context for OBL. In a way, chapter four presents a validated instrument to examine that specific context. The ISOBL scale can be used to do a context analysis. The scale measures teachers' perception of institutional support received as regards OBL. Hence, chapter four can address the suggestions made in chapter two.

The fourth and final relationship can be noticed between chapter three and four. Chapter three presents how teachers live through a TPD programme for OBL. The chapter indicates positive feelings and more negative feelings. The relationship with chapter four is that these feelings can be seen as a guidance for identifying thresholds and stimulators for TPD for OBL. Institutions can, for example, focus on the feeling of connectivity to target specific items of the ISOBL scale. To illustrate, one of the lowest scores given by teachers was their perception of institutional support that targets change processes inherent to OBL. Thus, institutions can focus on the feelings of connectivity (e.g. informal professional learning (Evans, 2018)) and responsibility to stimulate teachers to talk about these change processes. Thus, the results of chapter three might be used to tackle the points of improvement identified when one uses the ISOBL scale. We acknowledge that this is more a conceptual relationship which needs further development. Conclusively, the ISOBL scale is built upon the first study's synthesised findings. The items from the ISOBL scale show a clear deliberate relationship with the six synthesised findings from the first chapter.

### **Highlights of this dissertation**

It can be a rather unusual way to present new key-elements at the end of a dissertation, however the following three key-elements are in general the main highlights resulting from the studies done. The first one is the professional identity of teachers – in the perspective of changing to an OBL environment – the second one is the digital capital of teachers, and the third one is the role of institutional support. Regarding the digital capital of teachers it will be explained later

that teachers' digital capital affects their engagement with technology. This digital capital is what we see as one of the main elements – next to other external and internal factors – that affects how teachers will process and experience a TPD for OBL. In what follows, this discussion will first present an outline of why teachers' professional identity is seen as a key-element and subsequently the same is done for digital capital, and institutional support for OBL. Each key-element will be discussed by debating the results of the different studies presented in the chapters of this dissertation, and by comparing these results to other current relevant literature.

### **Teachers' professional identity**

Throughout this dissertation, teachers' professional identity mainly became apparent in the first and third chapter. In the first chapter, addressing teachers' professional identity was one of the identified important components, and the aim of the third chapter was to shed light on teachers' professional identity by examining their feelings during a TPD programme for OBL. At first sight it appears that the important components of a TPD that targets OBL, as identified in our review, are not that different from the ones from other TPD approaches. To illustrate, Darling-Hammond et al. (2017) present seven important components of general TPD which include: content focus, active learning orientation, encouraging collaboration, using existing models of effective practice, providing coaching and professional support, integrating feedback and reflection and finally, offering a sustained duration. Some similarities with the components identified in the first chapter are, for example, a focus on actively engaging teachers, striving towards peer-collaboration and scaffolding the activities with professional support and feedback. However, some differences can also be noted. A possible difference is that a TPD for OBL might emphasise more strongly the change in teacher role and teacher identity.

This dissertation thus advocates, based on its findings in chapter one and three, that TPD for OBL should give considerate attention to teachers' professional identity. However, some general TPD approaches certainly already address teachers' professional identities and self-understanding (e.g. Kelchtermans, 2009), yet this appears to be more thoroughly present and advocated for in TPD for OBL research (Philipsen, Tondeur, Pareja Roblin, Vanslambrouck, & Zhu, 2016). For example, Baran et al. (2011) argue that when teachers move from face-to-

face to online teaching, their transformational learning processes entail three dimensions. These are: “(a) empowering online teachers, (b) promoting critical reflection, and (c) integrating technology into pedagogical inquiry” (p. 430). Baran et al. (2011) indicate that “As teachers move from traditional to online classrooms, they face constant challenges of finding their teacher-self” (p. 435). In addition, Tschida et al. (2016) argue that teachers perceive the change in role from lecturer to facilitator as the greatest change involved in transitioning to learning to teach online. Hence, current research on TPD for OBL demonstrates a clear emphasis on the teachers’ professional identity and roles, and this emphasis is also supported by the results in this dissertation, such as *inter alia* the recommendation to address teachers’ professional identity in the presented review study. One could therefore argue that a TPD for OBL should pay specific attention to the possible psychological changes inherent to transitioning to OBL (Wang et al., 2010). Furthermore, in the systematic review study – chapter one – it was argued that in online and blended learning there is a shift towards as how teachers should define themselves, because the identity of the teacher is no longer tied to the real-life face to face classroom (Meloncon, 2007).

Thus, we are inclined to state that TPD for OBL should give considerate attention to teachers’ professional identity, and that it generally can be seen as a more pivotal issue in TPD for OBL than in more general TPD. We acknowledge that the notion of ‘general’ does not cover the peculiarities of other TPD approaches. However, the specific changes involved in teachers transitioning to OBL means that one can legitimately ask what it is that makes this process of change different to other TPD approaches. In a TPD that targets OBL, it is not necessarily the content that teachers teach that changes, but rather the mode of how that content is taught. Therefore, the difference may lie in a greater need to address the personal and professional changes of teachers who change their teaching mode to teaching in an OBL environment (e.g. Tschida et al., 2016; Wang et al., 2010). In our review study Stein, Shephard and Harris (2011) argue that teachers need to understand that changing to online and blended learning also offers a possibility to re-examine current teaching practices. However, as the review also indicated, teachers might not always be willing to examine their current practices and their professional identities.



Nevertheless, teachers should be encouraged to examine their professional identities as it entails an often-neglected psychological change (Wang et al., 2010). Moreover, recent research strongly emphasises the importance of examining teachers' identities (e.g. Boylan et al., 2017; Hsieh, 2015). Therefore, although earlier studies had already indicated the importance of teachers' identities (e.g. Beijaard, Meijer, & Verloop, 2004), it is suggested that contemporary approaches still continue to value the examination and integration of teachers' professional identities in TPD research (Beijaard et al., 2004). In conclusion, teachers' professional identity is seen as a key-element throughout this dissertation because of the fact that when teachers are faced with a change to teaching – partially – online, this can affect their professional role and implies often a psychological change (Wang et al., 2010) of defining their new professional identity. That is why TPD for OBL should pay considerate attention to teachers' professional identity.

This is further supported by the results of the study presented in the fourth chapter, namely the scale development. One part of the study targeted the degree to which teachers perceive institutional support for the transitioning process to online or blended learning. The results indicated that this item was scored the second lowest of all items, a finding that is supported by Wang et al. (2010). Thus, it can be tentatively stated that institutions still can take initiatives to make teachers feel more supported in their change processes inherent to changing to OBL. Next to that, we can also assume that if institutions provide better support for the transition to OBL, teachers might also feel more competent in their TPACK (Technological, Pedagogical and Content Knowledge) skills. This was examined in the paper that targeted the development of the ISOBL scale. Hence, this is a further motivation to advise and recommend institutions to provide support for OBL (Almpanis, 2015).

### **The digital capital of teachers**

To our knowledge, the term 'digital capital' has not yet been introduced into the field of TPD. However, the term is closely aligned with the well-known notion of digital literacy (Lohnes Watulak, 2016). Beetham and Sharpe (2014) describe it as referring to "those capabilities which fit an individual for living, learning and working in a digital society" (p. 1). While Beetham and Sharpe (2014) refer to a digital society, this discussion does not. Not everyone is part of a digital society, or even wants to belong to one, and the level of how digital a certain

society is can vary greatly. This is supported by the ‘Measuring the Information Society Report’ of the ITU (International Telecommunication Union), which was published in 2016. The report indicates the existence of certain high-level digitalised cities and contexts but reveals that only 47% of the world’s population actually use the Internet (ITU, 2016). Therefore, this discussion avoids using the notion of ‘living in a digital society’ when defining digital capital. The notion of digital capital came from bringing together all the insights of this dissertation. In the first chapter we mainly targeted the important components of TPD for OBL, and there we could see that they generally adhere to skills (e.g. experiencing OBL hands-on), knowledge (e.g. specific content that adheres to teachers’ everyday practice) and attitudes (e.g. the attitude to disseminate new knowledge and skills that resulted from TPD for OBL). The second chapter added to this finding: To illustrate, one of the main identified themes was that the teachers who participated in the study developed a more critical attitude towards implementing OBL in their courses. They also developed a better didactical reasoning about how to teach with online technologies. The former relates clearly to attitudinal changes while the latter adheres more to knowledge about OBL. Thus far, this dissertation mainly identified components related to skills, attitudes and knowledge. However, the third study – hermeneutic phenomenology – added an extra component. One of the feelings that arose was a feeling of social connectedness, and this sprouted the idea that teachers could not only change their attitudes, knowledge or skills, but also their social networks. The importance of these social networks on technology engagement, which is also supported by Seale et al. (2015), led us to think about an umbrella term that would suit all changes made on all possible levels, namely: the notion of digital capital.

Digital capital is still fairly new within TPD research, even though the concepts of social capital and cultural capital are considerably better known (e.g. Bourdieu, 1986). Seale (2013) introduces a digital capital framework rooted in the conceptualisations of cultural and social capital described by Bourdieu (1986) and Putnam (2000). Seale (2013) argues that *digital cultural capital* can be seen as individuals or groups investing effort and time into enhancing their technological knowledge and skills by means of various forms of learning, both formal and informal. This digital cultural capital is achieved by socialisation in technology use through various socialisation agents (e.g. family and peers) and techno-cultural goods (e.g. exposure to books) (Seale, 2013; Selwyn, 2004). This form of digital cultural capital can be aligned with the teachers from the third chapter who followed a co-constructed professional development

programme. The aim was to enhance their technological knowledge and skills about online teaching. *Digital social capital* refers to people's networks of technological contacts and the related social support they experience (Seale, 2013). This digital social capital can be aligned with for example the feeling of social connectivity in the third chapter. Based on our results it can be stated that this feeling entails a social connection between people when they are professionalising themselves for OBL, which clearly relates to digital social capital.

If people's cultural and social capital (Seale, 2013) can influence their successful engagement with technology, then one can argue that these forms of capital cannot be neglected in preparing pre- or in-service teachers for OBL. Recent research by Seale et al. (2015) indicates that students have digital social and cultural resources, and that this affects their use of technology. However, the work of Seale (2013) and Seal et al. (2015) primarily targets students. The current discussion elaborates on the work of Seale et al. (2015) and introduces the notion of digital capital into teacher education and TPD. Furthermore we can draw some tentative conclusions based on this dissertation. Regarding chapter three we can argue that what Claire described – her connection with Meryl – could be seen as a form of digital social capital. We do however know that this needs further examination and that such statements need to be put in perspective in light of the fact that examining teachers digital capital was not the main focus of the third chapter. Nevertheless, the feeling of social connectivity identified with all the participants of the third study further supports the fact that social networks might have an effect on how teachers engage with technology.

On the basis of Selwyn (2004) and Seale's (2013) formulations regarding technological capital, digital cultural capital, and digital social capital respectively, this discussion presents an elaborated definition of 'digital capital' within the field of teacher education and TPD. The digital capital of a teacher is the combination of all their knowledge, skills, and attitudes, which are complemented by their personal and professional social networks or relationships, and which influences a teacher's engagement with technology. Technological engagement is seen here as any situation that a teacher faces in which he or she uses or learns about technology. Digital capital entails both teachers' digital cultural capital and their digital social capital. Moreover, the definition presented acknowledges teachers' personal and professional networks or relationships. Therefore, teachers' technological engagement is also influenced by how their

colleagues, students, friends, and family members position themselves regarding technology, and their interpretations of how teachers should engage with technology. Thus, when teachers face a situation in which a form of technological engagement is required, their digital capital may be insufficient, leading to a dissonance between their digital capital and the technological engagement required. This became apparent in the second chapter. In this chapter we noticed that adding online components could elicit negative experiences. As described in the studies at the base of the second chapter, one participant for example was afraid to use the online features. Making online typographical errors in a forum was one of the things that scared that specific participant. Hence, in this situation we might state that required technological engagement exceeded the digital capital of that participant. Therefore, one ought to take digital capital into account when professionalising teachers for OBL.

In other words, digital capital entails the knowledge, skills, attitudes, and networks that affect teachers' technological engagement. If one approaches digital capital from a TPD perspective, then one could argue that teacher change can be initiated on four levels, namely, cognitive or intellectual change, behavioural change, attitudinal change, and social change. These changes correspond to the traits of digital capital noted above, namely, knowledge, skills, attitudes, and networks respectively. The first three teacher change levels originate from mainly the first two chapters of this dissertation and align with Evans' (2014) work. She argues that the internal development processes of teachers participating in a TPD relate to cognitive, behavioural, and attitudinal development. The fourth teacher change level, social change, originates from the third chapter of this dissertation and align with Seale's (2013) notion of digital cultural capital and digital social capital, which stresses the importance of social influences on technological engagement. It also entails that by following a TPD for OBL, teachers can expand their social network and thus experience a social change.

### **Institutional support for online and blended learning**

The previous two highlights from this dissertation generally target the teacher level. However, as Almpanis (2015) already suggested: institutional support is needed if teachers wish to successfully integrate online components into their courses. Throughout the studies within this dissertation, it was often noticeable that the institutional context and institutional support played an important role in the professional development of teachers who wish to implement

an online component. To illustrate, both chapter one and two refer to the importance of the institutional context and culture: Nihuka and Voogt (2012) argued that institutional support can help to enhance teachers' skills for online teaching, while Cowan (2013) stated that the institutional leadership influences teachers' dispositions toward teaching online.

Contemporary research further supports the vital role of institutional support for OBL (Farmer & Ramsdale, 2016; McGee, Windes, & Torres, 2017) because it can either hinder or stimulate the enactment and sustainability of online teaching activities (Watson & McIntyre, 2012). Throughout the studies within this dissertation it became clear that there were without doubt many recent studies targeting or referring to the importance of institutional support for OBL (e.g. Kebritchi, Lipschuetz, Santiago, 2017; McGee et al., 2017; Sadler, Eilam, Bigger, Barry, 2016). However, few target teachers' perceptions of received institutional support and many studies fail to validate the measures used when examining institutional support (e.g., Elliott, Rhoades, Jackson, & Mandernach, 2015; Lion & Stark, 2010). In the fourth and final chapter of this dissertation, a scale was presented – Institutional Support for Online and Blended Learning (ISOBL) – and subsequently validated. Based on the current preliminary results institutional support is perceived the highest when it relates to infrastructure and the lowest when it comes to the teacher change processes inherent to the transition to OBL. These change processes are often neglected in the professional development process of teachers (Wang et al., 2010). However, it is also positive that the participants from the study presented in chapter four perceive institutional support the highest when it relates to infrastructure. Orr, Williams and Pennington (2009) state that if teachers perceive a higher degree of institutional support regarding infrastructure, this can positively influence their online teaching efforts.

### **What makes a TPD for OBL in adult education different?**

At the end of this dissertation one might ask what it is that distinguishes TPD for OBL in adult education and training from other TPD approaches. Basically, that question can be divided into two parts, namely: first TPD *for* OBL and second TPD for OBL *in* adult education. The first part – what distinguishes TPD for OBL from other TPD approaches – is already discussed throughout this discussion, but we will tackle some of the main insights here succinctly.

As argued in chapter one and throughout the discussion, we found that many of the important components of TPD for OBL align with the ones identified for more general TPD approaches, such as argued by Darling-Hammond et al. (2017) and Desimone and Garet (2015). Thus, we believe that indeed there is a great deal of alignment but that one of the main possible differences is that a greater emphasis needs to be put on teachers' professional identity. This does not mean that other TPD approaches do not need to address it. However, because of the change of teaching mode and because mediating their teacher-persona in a new and digital way, we do see professional identity receiving a more pivotal role in TPD for OBL than in other approaches. Another difference – although it is more a trait presumably – is that part of the TPD programme for OBL should be offered online because one of our important components states that teachers should experience OBL hands-on during their TPD programme. Thus, teach as you preach, a part of the TPD for OBL programme should be offered online to let teachers experience hands-on what it is to follow courses online. A third and final possible difference is that because of addressing teachers' digital capital a TPD for OBL should not only look at knowledge, skills and attitude development, but should also target the development of social networks. TPD for OBL should thus aim to instigate or further strengthen social networks of teachers.

These networks can aid teachers in their implementation of online components. To illustrate, in the last chapter of this dissertation one of the participants indicated that she felt a positive connection with another participant. If these connections endure, then it might happen that those two participants will contact each other when they have certain questions regarding the implementation of online components after the programme has ended. This is what we envision as the social changes that teachers might experience in a TPD for OBL. We do acknowledge that this idea is a hypothetical one and one that needs further examination.

Next to that, questions can be raised as to how TPD for OBL in adult education differs from other approaches. In other words, what distinguishes a TPD for OBL that has as participants adult educators from one that targets teachers from other educational levels. In essence, as Guskey already argued in 2002, *all* teachers, regardless of their educational level, should professionalise themselves. However, it is to our idea that it is the translation that the adult educator has to make to its practice that seems to be its uniqueness. To illustrate, teachers from

all educational levels need clear goals, need a supportive environment, need feedback and should reflect on possible enhancements made. The difference lies in the fact that the learners in adult education centres need – in general – a different approach (e.g. Knowles et al., 2015). Thus, the translation to practice that an adult educator has to make is one possible, yet quite distinctive, difference. However, again this is a hypothetical idea derived from the insights from this dissertation and definitely more will exist, albeit that this as well will need further research. Which leads us to the following part, namely the limitations of this dissertation and recommendations for further research.

### **Limitations and suggestions for further research**

As with every scientific work, this dissertation also has its limitations. To start with the presented framework – from chapter one – that targets the important components of TPD for OBL. It has not been discussed in detail how the framework can be used practically. The synthesised findings from chapter one can also show some overlap with each other and some components might also be allocated to other synthesised findings than how they are currently presented. To illustrate, peer support is in chapter one seen as a strategy to reach stated objectives, but it can also be seen as a procedure depending on the eye of the beholder. Further research can therefore examine how this framework can be improved, extended and implemented, and how it contributes to practitioners' and researchers' thinking of TPD for OBL. In addition, it would be interesting for more research to be conducted that portrays the change processes of teachers throughout a TPD for OBL programme. It would also be enriching to discover whether an expansion of the databases used would lead to different results. We generally selected four databases (Web of Science, PsycInfo, Google Scholar, and ERIC). This was done on the basis of their multidisciplinary articles, peer-review evaluation processes, and their position as high-quality leading databases. Nevertheless, checking more databases and adding more key search-terms could shed a different light on the study's results and could add valuable information to this dissertation's subject.

Making certain methodological choices will inevitably lead to several limitations in the conducted research process (Hannes et al., 2013). Some of the main limitations were for example in the first chapter the limited number of articles (n=15) reviewed. Although more studies could be deemed desirable – as long as they add new information to the existing results

– 15 articles can be deemed a sufficient number for a systematic review (Gast, Schildkamp, & van der Veen, 2017; Hwang, Bartlett, Greben, & Hand, 2017; Kurilovas, Dvareckienė, & Jevsikova 2016; Spolaôr & Vavassori Benitti, 2017) using a meta-aggregative approach (e.g. Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, (2017). In other chapters (two and three) it could be argued that the number of participants is too low, and indeed in some cases – mainly chapter two – it would be worthwhile to repeat the study with more participants. However, a sample size that is deemed too small can still contribute to the understanding of a certain phenomenon (Boddy, 2016). However, as a stimulus for further research, it would be interesting to see whether a larger number of participants or reviewed studies changes the outcomes as the ones identified in this dissertation. As regards chapter two we also acknowledge that three goals might have been too much to tackle. In that case it seems opportune to revision the paper with only two main clear goals and a stronger contribution to the scientific debate. However, significance lies in the eye of the reader and as Boddy (2016) argues it has to be stressed that even papers with a small number of participants can confirm existing views and/or elaborate or refute them.

Throughout this dissertation there was very little attention towards the effects on student/learner performance. The different studies presented in this dissertation mainly see teacher change as a justifiable end of professional development in itself. Thus, often the voice of the learners or students is not taken into account in this dissertation. By contrast, this is often the case in other TPD approaches (e.g. Consuegra & Engels, 2016; Desimone, 2009). We acknowledge that student learning and student outcomes are undoubtedly highly important factors to consider with regard to TPD, and therefore also when the TPD is directed at OBL. Hence, it would be worthwhile to examine the learners' experiences as well, even though we see teacher change as a legitimate end of TPD. If we are to understand how learners' reaction to changes made by their teacher, then we need also a further examination of the specific changes in teacher behaviour and knowledge and how this is perceived by the learners.

When one approaches a certain topic from a geo-cultural acknowledging way – i.e. specifying the context in which research has taken place – one might better understand the choices and emphases made, both as a writer and a reader. For example, this dissertation was written in a Western European context, in which TPD may be perceived or approached differently to an



American approach, which is accordingly highlighted by Evans (2014). Evans (2014) argues that an American approach to TPD would more probably envision heightened student performances as the end result of TPD (e.g. Desimone, 2009), while in a European context this will more probably be teacher change in itself (Edwards & Ellis, 2012). Therefore, knowledge of the context in which a study on TPD is written will enable understanding of why certain foci are chosen. This emphasis on the importance of contextual factors within TPD research is supported by the more recent work of Desimone and Garet (2015). Thus, we hope that as this dissertation and its results are read, it will become clear that our choice to not explicitly include students' performances in our framework from chapter one may stem from our contextual backgrounds, although we acknowledge its importance.

Additionally, this dissertation focused mainly on more formal TPD approaches, yet we strongly acknowledge the importance of other approaches. To illustrate, there has been more recent attention for informal everyday professional development (e.g. Evans, 2018; Kyndt, Gijbels, Grosemans, & Donche, 2016). Further research can most certainly add this valuable source of TPD possibilities to its agenda. Thus, we advocate for the fact that the limitations of the studies presented could form a base for further research to depart from.

Conclusively, further research can further examine the notion of digital capital. It would be interesting to position this further conceptually against other forms of capital as indicated by Bourdieu (1986) and Putnam (2000). Next to that, it might prove worthwhile to incorporate the notion of digital capital in a visual model that presents teachers' change processes. This visual representation of teachers' change processes is too often still missing (Clarke & Hollingsworth, 2002). Next to that, further research should also examine how the online and face-to-part relate to one another in blended learning. It would be interesting to see how teachers chose to blend, and how they decide which educational activities they enact in the online environment or face-to-face.

## **Recommendations for policy and practice**

This dissertation may be of particular importance to teacher trainers, policymakers and practitioners who wish to better understand the process and components of TPD for OBL; who

need support in understanding the complexity of how different changes occur and what contributes to the anchoring of these changes; who are new to the notion of digital capital, and how institutional support affects teachers' digital capital.

Regarding the specific traits of a TPD for OBL, this discussion introduced the notion of digital capital. Originating from this dissertation and the work of Selwyn (2004) and Seale (2013), the notion of digital capital presented here provides a useful lens to examine teachers' behaviour and their engagement with technology. Digital capital can affect how teachers behave in an online environment and how they behave in a PD for OBL. The significance of digital capital lies in its holistic approach. It not only integrates skills, knowledge, and attitudes, but also the social networks and relations related to the use of computers and technology. If we strive towards integrating online and blended learning courses in teacher education, we might already positively influence pre-service teachers' digital capital. We derive this idea from a recent study from Wingo, Ivankova, and Moss (2017) who reviewed studies that targeted faculty online teaching. They noticed that faculty who had previous experiences with online teaching, were more likely to proceed with teaching online courses (Wingo et al., 2017). Thus, offering an early experience with online teaching could make teachers more willing to teach online in a later stage of their profession. In this case, policymakers could advocate for new standards in the teacher education programmes in Flanders. Recently, more attention is given to this specific area albeit that it more often relates to ICT in general (Mets & van den Hauwe, 2015).

Next to that, steps can be taken to ensure that TPD initiatives are closely related to the teachers' everyday practice. In alignment with the latest advice of the European Commission on educators' digital competence (Redecker, 2017) – which we elaborate to OBL – policymakers can conduct a large-scale needs assessment survey to identify specific learning topics (Darling-Hammond et al., 2017). Subsequently, the policy could provide funding for initiatives that are targeting the identified needs of teachers (Darling-Hammond et al., 2017). In order to develop this needs assessment survey that is also valid and reliable, the policy could call upon research institutes, universities, or higher education to ensure the best theoretical and methodological foundations. Additionally, expert teachers could be identified (Darling-Hammond et al., 2017) in a further collaboration with professional network organisations and professional

development institutes (e.g. Tollnet). These experts could offer first-line support and guidance for practitioners, programme coordinators or school leaders.

The policy should also try to capture, collect and disseminate good practices. In this way policy can not only establish a database that functions as a possible guideline, but it also becomes clearer what is already known and done in the field of online and blended learning. In this way can teachers use that database to find resources about the use of online and blended learning, which might help them in identifying their own learning needs (Redecker, 2017). Within each institution there should also be a clear vision and rationale towards the use of OBL and how TPD concurrently is approached to address teachers needs on OBL. In this respect can the database serve as an inspiration for institutions who are still exploring the possibilities of OBL. Moreover, institutions could consult with their staff about their ideas and ambitions as regards OBL and write down together a vision about OBL and related TPD suggestions (Redecker, 2017). Ideally, they should tackle questions on time compensation for inter alia course development, the development of digital learning material and departmental leadership (Orr et al., 2009).

As regards the theoretical contributions we can state that the framework presented in chapter one can function as a theoretical contribution to the knowledge on TPD for OBL. The framework is not intended to undermine TPD approaches that do not implement the synthesised findings. The framework can offer a scientifically supported theoretical ground and guidance structure for future TPD approaches for OBL. Next to that, another theoretical contribution is the contextualised notion and proposed definition of digital capital. With this definition can practitioners, policymakers, and school leaders further refine their vision towards TPD for OBL. Because digital capital deliberately integrates networks and the effect of that network on people's engagement with technology (Seale et al., 2015), we hope that school leaders, professional development designers and teachers will more strongly acknowledge those networks. This theoretical acknowledgement might then further cascade into their practice.

## **General conclusions**

The increase in online and blended courses led to the fact that more teachers are now being asked to deliver (some of) their courses in an online environment (Salmon, 2011). Given that teaching skills in an online environment differ from those in a face-to-face environment (Salmon, 2011), teachers need to be trained to teach in an online or blended environment (Salmon, 2011; Tschida et al. 2016). Based on the studies done for this dissertation we can state that there are several components that are deemed important for a TPD for OBL. To illustrate, the TPD for OBL should acknowledge teachers' change processes regarding their identity and their role as an online teacher. Additionally, the TPD for OBL should also acknowledge different TPD strategies such as providing hands-on experiences with OBL environment that are aimed to support teachers' learning and professional development.

Next to that, we can state that 'online TPD' and 'TPD for OBL' are sometimes used interchangeably. Therefore, one should always strive to be clear as regards distinguishing between the mode of how a TPD is being delivered (online – blended – contact), and the subject of the TPD. Throughout this dissertation it became clear than adding an online component to a TPD programme can instigate both negative and positive experiences. The use of online features in a TPD programme – irrespective of the subject – should be done with a clear merit, rationale and reasoning. Only then can the addition of online features have beneficial results (e.g. Prestridge, 2016; van der Meij, Coenders, & McKenney, 2017).

Besides giving considerate thought to the important components of TPD for OBL and how it will be offered to the teachers, there should as well be a clear indication of how well teachers perceive the institutional support received when it comes to OBL. For example, based on the results of this dissertation it can be argued that teachers who attribute a higher score to their TPACK self-efficacy, also indicate that they perceive more institutional support. This suggests that a higher degree of perceived institutional support can affect teachers' TPACK self-efficacy and thus by extent also their digital capital. Therefore, TPD for OBL should aim to assess the level of perceived institutional support for OBL, because it could affect their engagement with technology. Moreover, the scale proposed in this dissertation can be justifiably used to do so, as long as it is done with the required deontological rigor and ethics such as conscientiously retesting the scale's reliability (Tavakol & Dennick, 2011).

As presented earlier, teachers' professional identities may play a pivotal role within TPD for OBL (e.g., Baran et al., 2011; Tschida et al., 2016; Wang et al., 2010). Hence, it would be worthwhile examining the effect of a TPD for OBL on teachers' professional identity. However, as Hsieh (2015) argues, it is not easy to grasp that complex and continuous process of identity formation. A possible solution is to examine teachers' feelings during a certain phenomenon which might lift a tip of the veil of teachers' professional identity construction (O'Connor, 2008). Teachers' professional identity is not solely related to their self-perception as professionals (Jonker, März, & Voogt, 2018), but also the relationships with their colleagues, because teachers do care about how they are viewed by others (Saunders, 2013). It is thus important to pay attention to how teachers feel during TPD programmes because it can affect how they see themselves as professionals which in turn can affect their engagement with technology. Thus, put in the perspective of the two key-elements of this dissertation: Teachers' feelings during a TPD for OBL are worth examining because it is a part of their digital capital – due to the social network that influences their actions – and because it is a part of how they build their professional identities.

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