A model for online professional development of early childhood teachers in South Africa

by

LEONIE MAGDALENA VAN DER WESTHUIZEN

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SUPERVISOR: DR D Hannaway

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DECLARATION

Name: Leonie M van der Westhuizen

Student number: 44582463

Degree: PhD (Education)

Title: A model for online professional development of early childhood teachers in South Africa

I declare that this thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.

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DEDICATION

In the pursuit of academic excellence and the betterment of society, this study stands as a heartfelt tribute to the devoted Early Childhood teachers in South Africa. It is dedicated to these remarkable individuals, whose unwavering commitment and warm, nurturing relationships with children have left an indelible mark on the future of our communities and the well-being of South Africa as a whole. Their relentless dedication and tireless efforts serve as a beacon of hope, illuminating the path to a brighter tomorrow.

ACKNOWLEDGEMENTS

On the 28th of March 2023, a tragic incident claimed the life of Leonie van der Westhuizen, a passionate scholar who had dedicated herself to the pursuit of knowledge and the betterment of Early Childhood Education. Just two days prior, she was subjected to a brutal attack while in transit to Cape Town Airport, leaving an irreplaceable void in our lives. A stone was callously thrown through her car window and her cell phone was taken, bringing a profound sense of loss to her family and the academic community.

As her husband of 49 years, I bear witness to the fervour and dedication with which Leonie embarked on her PhD journey. Her aspiration was to submit her research for examination in October 2023. Leonie held a special place in her heart for the teachers and children involved in Early Childhood Education, recognizing the transformative power of their work. It is with a heavy heart that I share the sentiments of the participating teachers upon learning of Leonie's passing - they expressed their deep appreciation for the opportunities she provided and the profound impact of her warmth and respect in her interactions with them.

On behalf of Leonie, I extend my heartfelt gratitude to Donna for her unwavering, clear and inspiring supervision, which spanned from Leonie's Master's studies and beyond. Leonie often spoke of the love and friendship she shared with Donna, highlighting the significant difference it made in her life. I have personally witnessed Donna's expertise and passion for Early Childhood Education, making her contribution even more significant.

Leonie frequently mentioned the invaluable support she received from colleagues and friends, such as Talitha Smith, Flip Schutte and many others at Centurion Academy. Their unique, close-knit and supportive relationships meant the world to her.

In addition, I want to acknowledge the unwavering support of our family, who stood by Leonie throughout her serious commitment to her PhD. Their love and encouragement celebrate her life through her research work. I extend my gratitude to our children, Jaco, Riaan and Louise, Gerhard and Sonia, Etienne and Anzanne and our beloved grandchildren: Annika, Xander, Jordan, Shimei, Zoey, Ayda, Layla, Karmi and Amelia.

Heartfelt gratitude is also extended to the Early Childhood teachers who generously dedicated their time, expertise and unwavering commitment to the cause of Early Childhood Education, making their contributions indispensable to this research.

I would like to express our gratitude to Louise for her dedicated work on the graphics within the thesis. Leonie had a profound appreciation for aesthetics and the inclusion of images, especially the one featuring a metaphor using Leonie's own watercolour painting, is both meaningful and exquisitely beautiful, perfectly aligning Leonie's artistic and academic sensibilities and desires.

I also wish to express our deep appreciation to Dr Mariette Postma, the editor, whose invaluable efforts significantly contributed to the refinement and development of this study.

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SUMMARY

This study aimed to explore professional development in the digital era, taking into account current realities and challenges. The research focussed on programme design approaches and incorporated perspectives and theories relevant to current contextual realities. The objective was to create an effective online professional development (OTDP) model for teachers that considers their practical insights and experiences, empowering them to navigate evolving Early Childhood Education (ECE) environments. The study was informed by the ICT competency framework and included specific teacher roles, adult learning theories, and in-service professional development as key components.

The study utilised a phenomenological inquiry design and collected data from 23 early childhood teachers in Gauteng. The empirical findings highlighted the teachers' experiences, beliefs and needs for continuous professional development (CPD) programmes. Subsequent analyses resulted in the OTDP model, which was aligned with teachers' experiences and beliefs. The study's synthesis contributes a model of Early Childhood Development that emphasises authentic caring. The model has implications for professional development practices, policy changes, and future research directions.

Keywords: professional development; online teacher professional development; teacher education; early childhood education; South Africa; adult learning; digital learning; authentic caring; phenomenological research

Opsomming:

Die doel van hierdie studie was om professionele ontwikkeling in die digitale era te ondersoek met inagneming van huidige realiteite en uitdagings. Die navorsing het gefokus op program-ontwerpbenaderings en het perspektiewe en teorieë

geïnkorporeer wat verband hou met huidige kontekstuele realiteite. Die doelwit was om ’n effektiewe aanlyn professionele ontwikkelingsmodel vir onderwysers te skep wat hulle praktiese insigte en ervarings in ag neem en hulle bemagtig om ontwikkelende Vroeëkinderjare-onderwysomgewings te navigeer. Die studie is ingelig deur die IKT-bevoegdheidsraamwerk en het spesifieke onderwysersrolle, volwasse leerteorieë en indiens-professionele ontwikkeling as sleutelkomponente ingesluit.

Die studie het ’n fenomenologiese ondersoekontwerp gebruik en data van 23 kleinkindonderwysers in Gauteng ingesamel. Die empiriese bevindinge het die onderwysers se ervarings, oortuigings en behoeftes vir deurlopende professionele ontwikkelingsprogramme uitgelig. Daaropvolgende ontledings het gelei tot die aanlyn professionele ontwikkelingsmodel, wat in lyn is met onderwysers se ervarings en oortuigings. Die studie se sintese dra by tot ’n model van kleinkind-ontwikkeling wat outentieke omgee beklemtoon. Die model het implikasies vir professionele ontwikkelingspraktyke, beleidsveranderinge en toekomstige navorsingsrigtings.

Sleutelwoorde: professionele ontwikkeling; aanlyn professionele onderwyserontwikkeling; onderwysersopleiding; vroeëkinderjare-onderwys; Suid-Afrika; volwasse leer; digitale leer; outentieke omgee; fenomenologiese navorsing

Ukufingqa:

Lolu cwaningo beluhlose ukuhlola intuthuko yobungcweti esikhathini sedijithali, kucatshangelwa izinto ezingokoqobo nezinselele zamanje. Ucwaningo lugxile ezindleleni zokwenza izinhlelo kanye nokuhlanganisa imibono nemiqondo ehambisana nezimo zamanje. Injongo bekuwukwakha isifanekiso esiphumelelayo sokuthuthukiswa kochwepheshe ku-inthanethi (i-*OTDP*) yothisha esicabangela ulwazi lwabo olusebenzayo nabahlangabezane nako, kubanike amandla okuzulazula ezindaweni ezithuthukayo Zemfundo Yezingane Ezisakhula (*ECE*). Ucwaningo lwenziwe wuhlaka lwamakhono e-*ICT* futhi lwahlanganisa izindima ezithile zothisha, imibono yokufunda kwabantu abadala, kanye nokuthuthukiswa kochwepheshe emsebenzini njengezingxenye ezibalulekile.

Lolu cwaningo lusebenzise indlela yobunjalo bezinto ngendlela abantu abahlangabezana nazo futhi lwaqoqa imininingwane kothisha abezingane ezisakhula abangama-23 eGauteng. Okutholiwe okunobufakazi kwagqamisa ulwazi lothisha, izinkolelo kanye nezidingo zezinhlelo zokuthuthukiswa kochwepheshe okuqhubekayo (*CPD*). Ukuhlaziya okwalandela kwaholela esifanekisweni se-*OTDP*, esasihambisana nolwazi nezinkolelo zothisha. Ukuhlanganiswa kwalolu cwaningo kunikela isifanekiso Sokuthuthukiswa Kwezingane Ezisakhula esigcizelela ukunakekela okuyiqiniso. Isifanekiso sinemithelela yezinqubo zokuthuthukiswa kochwepheshe, izinguquko zenqubomgomo, nezinkombandlela zocwaningo zesikhathi esizayo.

Amagama asemqoka: intukuthuko yobungcweti; intukuthuko yobungcweti yothisha ku-inthanethi; imfundo yothisha; imfundo yezingane ezisakhula; iNingizimu Afrika; ukufunda kwabadala; ukufunda kwedijithali; ukunakekela okuyiqiniso; ucwaningo bobunjalo bezinto ngendlela abantu abahlangabezana nazo

KEY TERMS DESCRIBING THE TOPIC OF THE THESIS

Professional Development

Online Teacher Professional development

Teacher Education

Early Childhood Education

South Africa

Adult learning

Digital learning

Authentic caring

Phenomenological research

Acronyms and Abbreviations

4IR:	4th Industrial Revolution
AI:	Artificial Intelligence
CPD:	Continuous Professional Development
CPTD:	Continuous Professional Teacher Development
DAS:	Development Appraisal System
ECD:	Early Childhood Development
ECE:	Early Childhood Education
ECCE:	Early Childhood Care and Education
ICT:	Information and Communication Technology
ICT-CFT: ICT	Competency Framework for Teachers
IOT:	Internet of Things
IPA:	Interpretative Phenomenological Analysis
IQMS:	Integrated Quality Management System
ITS:	Intelligent Tutoring Systems
LMIC:	Low- and Middle-Income Country
NDP:	National Development Plan
NGO:	Non-Governmental Organisation
NQF:	National Qualifications Framework
OTPD:	Online Teacher Professional Development
PD:	Professional Development
SACE:	South African Council for Educators
SDG:	Sustainable Development Goal
SDL:	Self-Directed Learning
TEPL:	Technology-Enhanced Professional Learning
TPD:	Teacher Professional Development

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CHAPTER 1

ORIENTATION

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

In the context of the postCOVID-19 era and new challenges with 4th Industrial Revolution (4IR), more and more professions are becoming engaged in upskilling their members. Most professions require that their members acquire a compulsory number of Continuous Professional Development (CPD) points per year to contribute and manage their learning and growth. Professional development has become the buzzword to maintain professional credentials within an industry or profession. Given the United Nations' (2015) Sustainable Development Goal (SDG) 4.2 which makes a point that by 2030 "all girls and boys must have access to quality early childhood development, care and pre-primary education so that they are ready for primary education" (UN, 2015:21). The need for competent, professional teachers to ensure quality Early Childhood Education is crucial. In addition to initial professional qualifications, this makes continuous professional development essential to the teaching profession. This is especially applicable for early childhood teachers as The National Audit of 19 971 ECD centres across the nine provinces showed that only 30% of early childhood teachers had ECE certificates. It also stated that as many as 55% practitioners had no formal qualifications (PIECCE, 2018:19). It is therefore important to address this problem and to find pragmatic solutions to upskill the teachers.

According to the European Commission (Eurydice, 2019:11), "continuous professional development of teachers ensures the updating and development of the competencies of the teaching staff, including the acquisition of new skills, according to the educational needs and the educational curriculum, as well as according to the requirements regarding the adaptation of the competencies of the teaching staff to the changes in the educational system". In the United States of America, in nearly all the states, teachers are necessitated to undergo continuous professional development (Lipscomb, Hatfield, Goka-Dublose, Lewis & Fisher, 2021:2). Teachers in Norway, who are also doing continuous professional development, testify that they find the teaching materials in the professional

development programmes useful for their teaching practice in their classrooms (Haug & Mork, 2021:7). It is obvious that professional development of teachers is an important aspect globally to keep teachers upskilled. Since early childhood teachers in South Africa are under- and unqualified, it is crucial that professional development to improve the professional status of teaching is explored.

The National Policy Framework for Teacher Education and Development in South Africa (2006:17) states that the Continuous Professional Teacher Development (CPTD) system should ensure that the professional development of teachers emphasises the professional status and improves the value of teaching. The ultimate responsibility for the execution and supervision of the CPTD lies with The South African Council for Educators (SACE) as the statutory body for professional educators. An overview on Continuous Professional Teacher Development in South Africa by Thwala Richard, manager of professional development from SACE (2021), confirms that since the implementation of the CPTD system in 2007 almost all the educators have signed up. They are not, however, revisiting their CPTD accounts to update information or upload participation in professional development programmes and points scored. As a result, the professional development of the teachers is not improving accordingly and the provision of professional development is inadequate. The process of bridging the gap between national policy and pedagogy can be slow, which is echoed by Coe, Carl and Frick (2010:210). In addition, the Early Childhood Education sector is fragmented and the training is varied amongst NGO's and only more recently, included in Higher Education Institutions. This results in Early Childhood teachers' initial professional training, let alone continuous professional development, being historically unregulated. In terms of the South African Council for Educators Act, No. 31 of 2000, "no person may be employed as an educator by any employer unless the person is registered with the Council". However, not everyone working in ECE meets the minimum requirements to register, which is set at "ECE teachers with a minimum NQF level 4 ECE qualification employed in public schools in Grade R". So, there is a conundrum for the sector, birth to four years, regarding regulation of professionalisation and through CPTD provided by SACE.

According to Schachter (2015:5), the current state of ECE shows that despite the increasing agreement that Professional Development (PD) is important, sufficient indication of how theory informs ECE Professional Development is lacking. Preceding reviews of PD have only concentrated on explicit topics, such as general excellent care for young children, not offering a thorough examination of the larger quantity of PD. The quality of PD in ECE is lacking instruction in content areas such as math, science, or children's socioemotional development (Schachter, 2015:4) and there is no obvious understanding of how researchers establish and are responsible for impact related to their PD.

Over and above systemic issues, research done in South Africa by du Plessis and Mestry (2019:1) shows that school managements are progressively more worried about difficulties of teacher development, but more emphasis is on urban schools, with the consequence that rural schools are neglected. Moreover, teachers experience several challenges to participate in these Professional Development activities, one being that they are unable to attend in person. Travelling to attend in-service training may require long journeys, resulting in teachers being absent from school and teaching time being lost (du Plessis and Mestry, 2019:2).

An online professional development programme can provide a practical solution to this challenge as this will make professional development accessible and create an opportunity for the teachers to complete the PD activities in their own time. Online teachers' professional development (OTPD) is progressively used to help focus on concerns such as time, finances and geographic limitations (Powell & Bodur, 2019:19).

This study intends to explore approaches to and models of ECE professional teacher development to make it more appropriate and attainable for teachers, to improve the quality of teaching and reinforce the professional status of teaching in early childhood.

Challenges teachers experience to access opportunities such as face-to-face PD sessions is a phenomenon experienced internationally as well as in South Africa. In Turkey, Kara, Erdoğdu, Kokoç and Cagiltay (2019:5) confirm that time

constraints are one challenge because teachers must balance work, children and households. Distance is another challenge as most teachers live in rural areas far from universities, NGOs and private institutions providing the PD. The same challenges apply in South Africa. Du Plessis et al. (2019:1) state that “rural areas are generally remote and relatively underdeveloped”. As a result, many rural schools in South Africa lack essential physical resources such as water, sanitation, or electricity (du Plessis et al. 2019:6). This results in teachers being hesitant to be in rural areas and therefore they express a strong preference for urban settings with a view to their professional development (du Plessis et al. 2019:4). In addition, affordability is another challenge as many ECE teachers in rural areas cannot afford travelling to attend or paying for conferences or professional development sessions. Hoffman and Lance (2018:132) from the United States of America confirm this financial challenge as teachers need to acquire resources such as computers and technology devices. Another challenge as cited by du Plessis et al. (2019:5), is that sustenance services and the possibility to go to in-service courses are not that readily available for rural teachers. Lastly, teachers, as many other professionals, are deeply challenged by the lack of data and the poor electricity supply. According to Kayembe and Nel (2019:11) quite a number of the population in South Africa “still have no access to clean water, transport and electricity”. This study intends to bridge the gap of inaccessible PD by creating a model for online professional development of early childhood teachers in South Africa. Professional development offered online will be explored as a solution to overcome some of the challenges experienced by teachers to access the early childhood programmes.

Since teachers themselves need to be competent in the use of digital technology to make use of an online teacher professional development programme, the framings of ICT-CFT (Mavroudi & Tsagari, 2018:3) will be used to explore the abilities required to teach effectively with ICT.

To answer the research questions (see 1.6) and develop an online model to facilitate professional development of ECE teachers, three major perspectives were considered. Firstly, adult learning theories and their relevance for the professional development of adults in the workplace, which can also be applied to

online training for early childhood teachers was interrogated. A second factor investigated through literature and the empirical study are the challenges faced by ECE teachers regarding Professional Development. Lastly, the required skills gap and expectations of ECE teachers which needs to be addressed by an online professional development programme were identified.

1.2 PROBLEM STATEMENT

From the introduction and contextualisation, it is evident that changing contexts require a rethinking of Professional Development in Early Childhood Development.

In South Africa, official professional development programmes presented by the Department of Education appear ineffective in schools since they were too academic with not much practical significance for teachers (Steyn, 2010:356). The National Audit of 19 971 ECD centres shows that “only 30% of practitioners had ECE certificates on any level and that diplomas and degrees were rare. 55% practitioners had no formal qualifications” (PIECCE, 2018:19). It remains important for the teachers to continuously develop and acquire new skills, to remain effective in their teaching (Geldenhuys & Oosthuizen, 2015:203), but the impact of programmes must also be considered. It is thus imperative to make relevant continuous development programmes more accessible to all teachers including all early childhood development teachers.

The main focus of this study is on what is involved in professional development of ECE teachers in light of the shifting digitalization contexts. To what extent is moving online in PD opportunities a workable solution in all the diverse ECE settings in South Africa? The main question for this study therefore is: What are the features of a model for online professional development of ECE teachers in South Africa that can be relevant and appropriate to address the current challenges teachers experience?

A model for online professional development for teachers, especially early childhood teachers, to enhance their teaching, technological and professional skills in practice will contribute to the professional status of teaching.

1.3 RATIONALE FOR THE STUDY

There are several reasons why early childhood teachers need continuous professional development. Skills gaps in teachers' professional development appear because of new developments in both technology and new pedagogies during crisis situations such as the COVID-19 pandemic. In addition, new knowledge due to research and new situations demand new ways of doing things and research indicates that teachers often lack technological skills to adapt (Almerich, Orellana, Suárez-Rodríguez and Díaz-García, 2016:112). Teachers find it challenging to use new technologies in their teaching, because the technological pedagogical training they obtained was insufficient (Mavroudi and Mestry, 2018:2).

The rationale for this study is that the professional development of early childhood teachers is inadequate given the realities of teaching in an ever-changing context and developing world. The Report of the Ministerial Committee on Rural Education (DOE, 2005a) shows that there is a serious scarcity of qualified and knowledgeable teachers in the rural schools in South Africa with limited professional development programmes for these teachers (Onwu & Sehoole, 2015:130). The technological and pedagogical training teachers obtained during their initial study, might be outdated as new technological developments in the field occur on a regular basis, which they find challenging to use in their own teaching (Mavroudi et al., 2018:2). Teachers need more technological and pedagogical knowledge and furthermore, should know how to incorporate digital technology in education. In this postCOVID-19 4IR era, it makes sense for the education sector to also upskill their teachers to become more knowledgeable and skilled in an online world. With that, teachers also need procedural and technical knowledge for successful digitally assisted teaching (Zsoldos-Marchis, 2017:1). In South Africa, the information, the ability to teach as well as the qualifications of the personnel in ECE are a source for uneasiness (PIECCE, 2018:19). Various factors around accessibility, such as time, distance and cost deter teachers' involvement in professional development. Online professional development programmes might be a key answer to ensure that all the teachers and especially early childhood development teachers' training, are advanced and thus improve the professional status of teachers.

1.4 THEORETICAL FRAMEWORK

The purpose of this study is to describe and understand the contextual realities and requirements of ECE teachers to propose an online PD model which will enable teachers to integrate and respond appropriately to the gaps and challenges in their professional development. To pursue this purpose, the study needs to clarify theoretical perspectives on professional development and the role of digital technology in its offerings.

The theoretical framework utilised in this study is an adapted and flipped ICT-CFT framework. UNESCO's (UNESCO, 2011:10) ICT Competency Framework for Teachers (ICT-CFT) is an international scale establishing the abilities required to teach efficiently with ICT. Horizontally, it is organised in three different methodologies representing three consecutive stages of a teacher's development: knowledge creation, knowledge acquisition through digital literacy and knowledge deepening. Vertically, it addresses six aspects of a teacher's work: curriculum and assessment, understanding ICT in education, pedagogy, organisation and administration, ICT and teacher professional learning (Mavroudi et al., 2018:3).

In this flipped version of the ICT-CFT framework the teacher's professional development is the focus and therefore at the apex of the framework. The three methodologies namely knowledge acquisition, knowledge deepening and knowledge creation follow to show the pedagogical use of ICT. These methodologies in turn focus on the teacher as researcher and lifelong learner using digital literacy in online interaction with other teachers. The teacher as networker collaborates in online environments. The teacher as innovator acquires new pedagogical knowledge to adapt to the changing education environment. In order to develop an OTPD model for an early childhood teacher, it is important to establish what the teachers' skills gaps and strengths are, what challenges these teachers may experience and the role adult learning theories play in this process.

According to UNESCO (2011:10), teachers' professional development is a lifelong learning process, rather than a once-in-a-lifetime event. The recommendation is that the ICT-CFT theoretical framework be integrated into the three phases of teacher professional development with phase one being pre-service, which focuses on initial preparation of pedagogy, subject matter knowledge, management skills and the use

of various teaching tools including digital tools and resources. The second phase, in-service, includes planned face-to-face and distance training opportunities building upon pre-service programmes and directly relevant to teaching challenges in classrooms and beyond. The third phase is on-going formal and informal pedagogical and technical support, enabled by ICTs, for teachers' advanced use of ICT to address everyday challenges and to enable students' learning. These three phases will be explored in this study but with the main focus being on the second phase, in-service professional development.

The theoretical framing and the proposed model is detailed in Chapter 3.

1.5 KEY CONCEPTS

For the purpose of this study, the key concepts are:

1.5.1 Adult learning

Concept adult learning theories relate to how adults learn and how their learning differs from children's learning. It is important for this study to include several adult learning theories to show their relevance for professional development of adults in the workplace and how they can be used to design an effective online teacher professional development model. According to Merriam (2001:3) no particular theory or model provides complete knowledge about adult learners, learning context and learner understanding. Numerous learning theories have significance for the professional development of adults in the workplace which can also be effective for online training for early childhood development teachers.

1.5.2 Digital learning

Digital learning involves teaching others with the use of technology (Taneja, 2020:72). Digital learning is learning resulting from technology-based instructional practices, either blended or virtual. This concept is relevant for understanding how early childhood teachers access and share self-regulatory resources for learning, according to Mavroudi et al. (2018:2).

1.5.3 Early Childhood

Early Childhood is defined internationally as the age group between birth to eight-year-old. In this study the term early childhood following South African education policies is defined as the age group birth to four years (The South African Curriculum Framework: 2005, p. 1). The importance of choosing the early childhood phase is that the professional development of early childhood teachers is inadequate as statistics show that about 55% ECE practitioners had no formal qualifications (PIECCE, 2018:19).

1.5.4 Online teacher professional development (OTPD)

Online teacher professional development consists of learning material that is presented in an online design for teacher professional development (Powell et al., 2019:21). This is important for this study as it forms a basis for improving teachers' teaching and developing new teaching methods to contribute to students' learning (Zhang & Liu, 2019:145).

1.5.5 Teacher education

Teacher education refers to procedures that should equip teachers with knowledge, attitudes, behaviours and skills that would enable them to perform their tasks effectively in the classroom (Darling-Hammond, 2017:3). This study aims to provide teachers with a model for online teacher training to make it more accessible for all early childhood teachers.

1.6 AIM AND OBJECTIVES

The purpose of this study is to research and assess the current state of Teacher Professional Development (TPD) models, with a focus on online alternative models and their scope, relevance and theoretical foundations. In addition, the study seeks to identify the crucial elements that an OTDP should have.

The aims are:

1. To examine and describe the existing models of TPD and analyse how they are influenced by different educational theories.

2. To compare and contrast various online alternative TPD models in terms of their scope and relevance in addressing the professional development needs of teachers.
3. To develop a comprehensive framework for an OTDP programme based on an extensive review of relevant literature and data gathered from schools.
4. To explore the implications of the OTDP framework on the teachers' roles as networkers, researchers and innovators, both in the classroom and in the broader educational policy context.

1.7 RESEARCH METHODOLOGY

A detailed explanation of the research paradigm, approach, design and analysis are described and motivated and an explanation of how they were applied in the study including the specific procedures and techniques used for OTPD model creation and evaluation are given in Chapter 4. The table below serves as a summary of the research methodology and a very brief explanation of each methodological aspect is provided thereafter.

Table 1.1: Summary of Research Methodology

Methodological Aspect	Description
Research Paradigm	Interpretive paradigm
Research Approach	Qualitative research
Research Design	Phenomenological research
Population and sampling	Snowball sampling 23 early childhood teacher participants
Data Collection Methods	In-depth interviews Qualitative document analysis Focus group interviews
Data Analysis Method	Interpretative Phenomenological Analysis (IPA)
Trustworthiness	Ensuring rigour and credibility through established qualitative research standards

Ethical Considerations	Addressing ethical considerations in research design and data collection

1.7.1 Research Paradigm

This study adopts the interpretivist paradigm, focusing on socially constructed human experiences (Mertens, 2015:78). Recognizing the impact of participants' views and the researcher's 'lived experience' (Creswell, 2012), the study draws on ECE teachers' perspectives to understand and interpret professional development phenomena. The researcher aimed for an unbiased stance, listening to and interpreting teacher experiences without introducing personal narratives (Alase, 2017:9).

1.7.2 Research Approach

The qualitative research approach provides an in-depth understanding of teacher professional development through participants' personal experiences (Creswell, 2012). Respecting participants, the approach allows them to influence the research process rules, fostering a collaborative dynamic (Tracy, 2010:847). Qualitative methods such as interviews focused on a small cohort of ECE teachers, aimed for a detailed comprehension of their experiences and challenges in professional development.

1.7.3 Research Design

1.7.3.1 Introduction

Conducted as a qualitative phenomenological study, this research explored the significance of lived experiences in teacher professional development (Creswell, 2012). Following Schutz's social phenomenology (Fereday and Muir-Cochrane, 2006:81), the study generated data from participants who share the same phenomenon, provided a collective essence. Data analysis incorporated interpretative thematic interpretation.

1.7.3.2 Selection of Participants and Sampling

Using snowball sampling, participants were selected through networking and referral, resulting in a diverse group of 23 early childhood teachers. The sampling criteria included practising ECE teachers with various experiences willing to share views on professional development experiences and challenges.

1.7.3.3 Instruments and Data Collection Techniques

Employing in-depth interviews, qualitative document analysis and focus group interviews, the study gathered insights into teachers' experiences, challenges and perspectives. In-depth interviews explored detailed information and field notes from interviews aided qualitative document analysis. Focus group interviews provided a collaborative setting for discussing attitudes and perceptions.

1.7.4 Data Analysis Approach

The research employed Interpretative Phenomenological Analysis (IPA) to understand participants' lived experiences (Alase, 2017:9). IPA emphasizes a personal relationship between the researcher and participants, ensuring a participant-oriented approach. Themes were developed to identify deeper structures in the interview transcripts.

1.8 TRUSTWORTHINESS

To ensure trustworthiness, the study addressed credibility through triangulation, using diverse data collection methods. Transferability was considered by documenting the research process for potential replication. Dependability was assured by linking and supporting research methods, while confirmability was maintained through bracketing, reducing bias and preconceptions (Weatherford et al., 2019:92).

1.9 ETHICAL CONSIDERATIONS

This study strictly adhered to ethical principles and guidelines sought from and outlined by UNISA and the College of Education Ethics Committee (See Appendix A). The following principles were upheld:

Confidentiality and Non-disclosure: Stringent measures were taken to ensure the confidentiality and non-disclosure of participants' information. All data collected were treated with the utmost discretion and stored securely.
Voluntary Informed Consent: Participants provided voluntary informed consent (See Appendix D, E, F) signifying their willingness to participate after being fully informed about the study's purpose, procedures and potential outcomes.
Voluntary Participation: Participants had the right to engage in the study voluntarily and they were assured of their freedom to withdraw at any stage without facing consequences.
Right to Withdraw: Participants were explicitly informed of their right to withdraw from the study at any point without facing any adverse effects.
Openness and Justice: The study maintained openness and justice towards research participants, particularly early childhood teachers. The researcher sought permission from the preschool principals, ensuring transparency in the research process.
Confidentiality and Anonymity: Participants were guaranteed confidentiality and anonymity throughout the study. Consent forms, in line with UNISA's ethics policy, were signed, assuring participants that their information would only be used for study purposes and kept confidential.
No Detriment or Inconvenience: Participants were assured that the study would not cause them any harm or inconvenience. The researcher prioritized clarity and authenticity in representing participants' ideas, ensuring a positive and respectful research experience.

1.10 CHAPTER DIVISION

Chapter 1: Orientation
Chapter 1 presents the proposed model for OTPD in order to lay the groundwork for the study and answer the particular demands of early childhood teachers in South Africa. The study's goals and objectives are briefly summarized which also acts as an

introduction to the thesis. The fundamental goal is to create a useful and culturally appropriate OTPD framework specifically designed for South African ECE teachers. It also provides an introduction to the theoretical underpinnings and methodological techniques.

Chapter 2: Contextual review of online professional development in ECE

This chapter contextualises the study by way of unpacking the definition of ECE in South Africa and situating the study within policy and socio-economic contexts. The training of ECE teachers and the concept and practice of professional development is explored. The chapter concludes with the discussion of the benefits and barriers of teachers' continuous professional development.

Chapter 3: Conceptual and theoretical review of online professional development in ECE

In Chapter 3, a conceptual exploration unfolds, as it delves into an array of learning theories and delves into adult learning theories and the link between adult learning theories and digital learning. The theoretical framework that underpins the subsequent development of the OTPD model, known as the Flipped ICT-CFT framework is discussed.

Chapter 4: Research Methodology

This chapter carefully explains the research approaches used for the creation and evaluation of the OTPD model. This comprehensive description covers the phenomenological study design, the qualitative research approach and the nuances of data generation and IPA analysis.

Chapter 5: Data analysis, findings and interpretation

The research results and interpretation are presented in Chapter 5 within the overall context of the OTPD model. The sub-research topics that led to the data analysis are rigorously examined in this chapter along with a thorough evaluation of the relevant literature. The nuanced understanding of important findings will ultimately provide helpful insights to the field of professional development in ECE, not only in South Africa but also in other contexts around the world.

Chapter 6: Summary, conclusions and recommendations

The synthesis of the knowledge gleaned throughout this study is presented in Chapter 6. This chapter combines a thorough narrative of insights and discoveries using the synthesis of the important findings from both the literature review and the empirical study. The research culminates in a series of findings for professional development that illuminates the unique setting of ECE in South Africa. The practical implications of the study's findings are also presented and provide insightful advice and suggestions for improving OTPD programmes.

CHAPTER 2

CONTEXTUAL REVIEW OF ONLINE PROFESSIONAL DEVELOPMENT IN EARLY CHILDHOOD EDUCATION

2.1 INTRODUCTION

The aims of this research include a study of literature and the scholarly evidence relating to the phenomena of teacher professional development (PD) that will contribute to early childhood teachers' continuous professional development (CPD). Similarly, this chapter will offer an overview of the context, as well as the concept of OTPD. Further, it will expose the challenges teachers experience and the impact thereof on their involvement in CPD, as well as their skills and expectations of how to expand their knowledge and strengthen their teaching practices. Lastly, how adult learning theories can be used to design effective online teacher professional development will be outlined.

2.2 EARLY CHILDHOOD EDUCATION IN SOUTH AFRICA

In the field of early childhood development and education, there are several acronyms that can sometimes cause confusion. ECE, ECCE and ECD are often used interchangeably, but they have distinct meanings. ECE stands for Early Childhood Education, which refers to the formal education and instructional programmes provided to children in their early years. ECCE stands for Early Childhood Care and Education, encompassing a broader scope that includes both care and education aspects for young children. ECD stands for Early Childhood Development, which encompasses the holistic development of children, including their physical, cognitive, social and emotional well-being. In the South African context, the researcher chose to use ECE as it specifically focuses on the educational component and highlights the importance of quality Early Childhood Education programmes as a foundation for children's learning and future success.

2.2.1 ECE age grouping clarification

Early Childhood is defined by the Policy on minimum Requirements (2017:8) as “the period of human development from birth to the year before a child enters Grade R/ formal school”. Childhood development is a maturing and collaborative process, resulting in a planned development of perceptual, motor, cognitive, language, socio-emotional and self-regulation skills (Black, Walker and Fernald, 2017:78).

2.2.2 Physical factors defining ECE

According to Aina and Bipath (2022:2) ECD centres need proper infrastructure such as spacious and well-ventilated classrooms, appropriate playgrounds, safe equipment, water and electricity to promote quality early childhood care and education (ECCE). Tahira et al. (2021:2210) see ECE as the education of children from birth to adolescence.

On the other hand, the South African policy documents and guidelines state that quality ECCE is mainly determined by the infrastructure at the school, the learning programme, group size, teacher-child ratio, developmentally appropriate education materials and resources. Unfortunately, there is no indication how the available resources should be used to promote quality ECCE (Aina and Bipath, 2022:2). ECCE fulfills and develops children’s needs holistically in terms of social, emotional, cognitive and physical needs (Fadlillah, 2019:1802). ECD centres must be registered and licensed to operate in South Africa according to The Children’s Act 38 of 2005 (Children’s Act 38 of 2005 2018). Infrastructural resources alone cannot improve the quality of ECCE. Resources such as teaching and learning materials, play apparatus and toys, human and financial resources are important components to promote quality ECCE (Aina and Bipath, 2022:4). The ECD centres in South Africa without basic infrastructure such as running water, access to electricity, suitable sanitation, secure fencing and proper food preparation leads to poor quality ECCE (Ibid.). According to Fadlillah (2019:1) ECCE does not only prepare children for elementary school, but also meets and improves children’s needs holistically in terms of social, emotional, cognitive and physical needs. ECCE helps children obtain optimal language, math and social-emotional skills. For this study the term ECE is used to place emphasis on educational characteristics in the definition, while not disregarding the caring component.

2.2.3 Situating ECE within Sustainable Development Goals (SDG)

The need for a more sustainable world was universally acknowledged by United Nations members in September 2015, when 17 Sustainable Development Goals (SDGs) were decided on, placing education at the centre of the plan to encourage sustainable development (Annan-Diab and Molinari, 2017:2). ECE in South Africa has advanced tremendously since 1994 and intends to unravel the damage done by Apartheid whereby not all children had the same opportunities in education (Richter, Tomlinson, Watt, Hunt and Lindland, 2019:295). The National Development Plan 2030 (NDP) was launched in August 2013 with the goal to reduce poverty and decrease inequality in South Africa by 2030 (NDP, 2013:24). This is endorsed by Baijnath (2018:87) saying "the main aspiration of the (NDP) is to eliminate poverty and reduce inequality by 2030". Education is at the core of South Africa's national development (ibid.). The NDP recognises the potential of education to transform individuals. The launch of the NDP was already eighteen years into democracy and South Africa is still an extremely unequal society where too many people live in poverty and many do not have jobs. The NDP (2013:24) states that most black learners receive poor quality school education. Targets set by the NDP include to increase the quality of education so that all children have at least two years of preschool education and all children in grade 3 can read and write (NDP, 2013:34). This includes an education accountability chain, with lines of responsibility from state to classroom which will require expanding further education and training delivering well-trained teachers. The aforementioned supports the necessity of this study where the aim is to investigate how to make PD more accessible to teachers.

2.2.4 Socio-economic context of ECE

South Africa's White Paper 5 on Early Childhood Education (2001) specified that it is the State's responsibility to fund quality ECD services (Richter, Tomlinson, Watt, Hunt and Lindland, 2019:295). In South Africa, because of Apartheid, most young children have been negatively affected by a series of social and economic disparities as they are disadvantaged by their fundamental socio-economic rights, such as education,

social services, health care and nutrition (Ashley-Cooper, van Niekerk and Atmore, 2019:87). The National Development Plan recognises the important role that early childhood development (ECD) can play in accomplishing South Africa's goals for socio-economic development. The 2012 Diagnostic Review of the ECD Sector (Richter et al., 2019:295), which was authorised by the Presidency, identified important gaps in service delivery, such as services for the youngest children (0-3 years), support for parenting, the delivering of services for well-trained teachers and addressing the needs of children and families living with disabilities. These inadequate services undermine the development of the young child (Richter et al., 2019:296). This disparity of service delivery is particularly obvious for children living in rural areas who are more relentlessly side-lined than those living in urban areas (Ashley-Cooper et al., 2019:88). Despite strong statements in South Africa's ECD policy, the sentiment of the government, the public and, to some extent, stakeholders are influenced toward an aging up viewpoint, resulting in widespread investment in subsidies for privately provided, largely urban-based, fee-charging ECD centres that advantage 3–5-year-olds from wealthier families (Richter et al., 2019:306).

ECE is a form of enhanced childcare that allows mothers to work and provide additional resources for their families (Elango, Garcia, Heckman and Hojman, 2015:266). Research done by Elango et al. (2015:279), from the United States show that results from comprehensive programmes indicate that ECE is most successful when it is also aimed towards disadvantaged children. Because disadvantaged children have low-quality unique choices compared to advantaged children, they benefit more from ECE (Elango et al., 2015:279).

In 2004, attention was attracted globally with the outcome that 219 million (39%) children younger than 5 years in low-income and middle-income countries (LMICs) are at risk of not achieving their developmental capacity, leading to an average shortage of 19.8% in adult annual income (Black et al., 2017:79). Between 2004 and 2010, the projected number of children under 5 years in LMICs subjected to extreme poverty and therefore at risk of not achieving their developmental potential, dropped from 279.1 million (51% of children in 2004) to 249.4 million (43% of children in 2010 (Black

et al., 2017:80). South Asia experienced the largest decrease in both the number and frequency of children at risk (from 110.9 million to 88.8 million and from 65% to 53%, between 2004 and 2010). Sub-Saharan Africa had the highest frequency of children at risk of not reaching developmental potential (70% in 2004 and 66% in 2010) (Black et al., 2017:81). It is not only in countries outside of Africa where young children are at risk of not reaching their full developmental capacity, but also the children in Africa and South Africa are at risk reaching their full potential.

There are major risks to comprehensive child development in Africa, largely because of low levels of efficiency and economic development, fundamental inequality, political mismanagement and conflict. The risks include child stunting, iodine and iron deficits, as well as minimal levels of cognitive and socio-economic stimulation (Nsamenang and Tchombè, 2012:113).

In South Africa researchers found equal influences of high- versus low-income levels on the performances of young children across all developmental areas, such as language development and communication skills, numeracy, health and social-emotional development. The performance of the children from the poorest backgrounds are significantly unequally balanced when compared to their wealthier equals (Ashley-Cooper et al., 2019:89). This is supported by Harrison (2017:2) stating that young children in rural areas lack access to clinics, schools and adequate nutrition which can lead to underdeveloped growth. This makes it more important for teachers in the rural areas to have access to professional teacher development that includes cognitive and socio-economic stimulation to provide a better learning environment for all children. Teachers' professional development should also include how to provide an environment for the young children that is healthy and will look after the children's wellbeing. The fact that the young children's development has been neglected for so long is concerning and needs to be addressed with the greatest urgency.

2.3 ECE TEACHERS QUALIFICATIONS

According to Bipath (2020:229), the 2014 audit of ECD centres in South Africa shows that the majority of ECD practitioners are mostly un- or under-qualified and "…roughly 70% of practitioners nationally, do not have any specialised training in working with children". Harrison (2017:2) declares that it is crucial that South-Africa has well-trained early childhood teachers that can meet the needs of young children. Many student-teachers come from disadvantaged educational backgrounds. Teachers are not able to register with the South African Council for Educators (SACE) and are therefore unable to earn a salary of a professional teacher. In South Africa, more than half of the ECE teachers are unqualified.

Furthermore, teachers, including early childhood teachers, voice the need to enhance 21st century skills to prepare them for dealing with the difficulty of modern civilisations, policy documents and educational transformations around the world. This includes skills such as the ability to participate in high-level reasoning, understanding content and to utilise and transmit knowledge to solve problems (Haug and Mork, 2021:1). Early childhood teachers need increased support to expand their knowledge, strengthen practices and reduce stress, amidst stark realities and desired objectives. Personal and professional problems such as family responsibilities, lack of finances to travel and time limitations can be solved by offering online professional development to teachers. The correct support can lead to strengthening ECE which will benefit the development of young children (Lipscomb et al., 2021:2). This brings to the fore the observation that the literature does not show evidence that responsible measures are taken to improve the accessibility and the content of professional training for early childhood teachers. It is a great concern that so many early childhood teachers are unqualified and underqualified. An online model for PD for the early childhood teachers will ensure more accessibility and content for teachers of PD programmes.

Higher quality outcomes, such as quality of care and learning is not always associated with the level of qualification of ECD teachers. According to the findings of a study in the Western Cape, only 35% of practitioners responsible for infant and toddler classes had any form of qualification and only 47% of practitioners responsible for older children had any form of qualification (Atmore, van Niekerk and Ashley-Cooper, 2012:

134). Possible reasons why training does not necessarily guarantee quality care and teaching include: a lack of practical demonstration and instruction during training, a lack of on-site support to assist with implementation of theoretical training and a lack of follow-up support after the completion of training to ensure consistent implementation. This notion is supported by Ashley-Cooper et al. (2019:90) who state that ECE teachers not only need qualification training, but they also require practical hands-on training, on-site support by external ECE experts in the field and fair working conditions as well. With modern technology, simulations, webcams and online demonstrations, this can be achieved online as well. An online model for PD including opportunities for early childhood teachers to share ideas and interesting practices in the classroom with other teachers is needed. Teachers can provide online video-based coaching on how to apply knowledge and interesting practices in certain situations.

The practises of ECE teachers will be enhanced and the development of the children elevated by professionalising the ECE sector. The teachers will become more intentional in their responses towards children. The Policy on Minimum Requirements for Programmes Leading to Qualifications for Early Childhood Development Educators (DHET, 2017) is a constructive phase in the training of ECE teachers (Bipath, 2020:237). Professional teacher development is therefore a viable solution to upskill teachers.

ECE has grown to become a significant entity internationally in recent years (Hannaway, Govender, Marais and Meier, 2019:1). ECE is important for the early development of young children attending care outside the home before entering formal schooling (grade R). ECE is a developmental setting for encouraging flexibility with young children which also includes young children with hostile childhood experiences such as maltreatment, exposure to violence, parental substance abuse, family separation and discrimination (Lipscomb, Hatfield, Goka-Dubose and Lewis, 2021:1). According to Harrison (2017:2) “a significant number of children under the age of six do not have access to essential ECCE services such as clean running water, adequate nutrition and safe structures to learn in". The problem is that only a few ECE teachers

have contact with professional support to assist these traumatised young children (Lipscomb, Hatfield, Goka-Dubose and Lewis, 2021:1).

In addition, multi-grade classes are common in rural areas in South Africa. This results in overcrowded classrooms where the teacher not only needs to deal with discipline problems, but also with the quality of education. ECE teachers' careers in rural and other 'hard to access' areas are limited because of the lack of professional support and training. Online education is an alternative option for teachers who are geographically isolated. These teachers' opportunities of distance teacher education are limited due to heavy teaching loads and training fees (Hannaway et al., 2019:3).

According to Haug and Mork from Norway (2021:1,2) there is a need amongst the teachers for knowledge, skills and proficiency in the following three domains, namely the cognitive domain, the intrapersonal domain and the interpersonal domain. The cognitive domain includes abilities related to thinking processes and strategies, knowledge and creativity, critical thinking and reasoning. The second domain, the intrapersonal domain is about the teacher's own beliefs and inspiration in learning, metacognition and self-regulated learning. The interpersonal domain includes competencies related to cooperation and leadership and to communicate effectively. Ashley-Cooper, van Niekerk and Atmore from South Africa (2019:90) state that teachers require practical hand-on training, onsite support by external ECD experts in the field and fair working conditions as well. These are the skills, knowledge and expertise ECE teachers require and that should be included in the teachers' professional development. According to Schachter (2015:31) teachers already have their own pre-existing knowledge, skills and dispositions and PD programmes for ECE teachers need to focus on three key elements namely, teachers' skills, knowledge and dispositions/personalities.

2.4 PROFESSIONAL DEVELOPMENT

2.4.1 Concept of Professional Development

Professional development has become the buzzword to maintain professional credentials within an industry or profession. Given the United Nations' (2015) Sustainable Development Goal (SDG) 4.2 which makes a point that by 2030 "all girls and boys must have access to quality early childhood development, care and pre-primary education so that they are ready for primary education" (UN, 2015:21) the need for competent, professional teachers to ensure quality ECE is crucial. In addition to initial professional qualifications, this makes CPD essential to the teaching profession. This is especially applicable for early childhood teachers as The National Audit of 19 971 ECD centres across the nine provinces showed that only 30% of early childhood teachers had ECE certificates. It also stated that as many as 55% practitioners had no formal qualifications (PIECCE, 2018:19). It is therefore important to address this problem and to find pragmatic solutions to upskill the teachers.

PD systems and programmes are important constructions to support ECE teachers. Nearly all the states in the United States of America require PD for teachers in licensed and/or regulated childcare programmes, although the number of hours and content of the compulsory PD varies across the states (Lipscomb, Hatfield, Goka-Dubose, Lewis and Fisher, 2021:2). ECE teachers continuously report the need for additional training, especially to help them manage the young children's behaviour as well as to strengthen their teaching practices. There are several PD programmes available to meet teachers' requirements, including in-person workshops, online courses and personalised training. The problem is that access to PD is inconsistent (Lipscomb et al., 2021:2). Haug and Mork (2021:5) conducted a large-scale qualitative study on PD programmes in five regions in Norway. A total of 634 course evaluations representing 55% of the teachers, on what teachers consider as useful PD for promoting 21st century skills, was collected. This resulted in experiential evidence and research agreements on at least five core features that make PD effective, namely content focus, active learning, collective participation, coherence and duration. These five features are widely used and implemented in design and studies of professional development programmes (PDPs) in all fields (Haug and Mork, 2021:2).

In the pre-1994 era, the South African teacher appraisal practices were largely authoritarian, bureaucratic, inspectorial and hierarchical (Geldenhuys et al., 2015:204). It was largely about teachers being compliant with departmental regulations rather than enhancing their PD skills (Geldenhuys et al., 2015:203). This resulted in teachers not committing to PD merely because it was expected of them and often went along with an element of fear. During this period, the Development Appraisal System (DAS) developed and supported teachers. The new Integrated Quality Management System (IQMS) came into practice to appraise and support teachers with a view to their development and to determine their areas of strengths and weaknesses (Geldenhuys et al., 2015:204). This change to the IQMS, meaning that teachers' professional needs can be identified, paves the way for this study to investigate how early childhood teachers can be supported in improving their practices. It is important to research the benefits and barriers South African teachers experience in being able to attend PD programmes to come to an understanding what these are and how they can translate into an OTPD model.

The National Policy Framework for Teacher Education and Development in South Africa (2006:17) states that the Continuous Professional Teacher Development (CPTD) system should ensure that the professional development of teachers emphasises the professional status and improves the value of teaching. The ultimate responsibility for the execution and supervision of the CPTD lies with The South African Council for Educators (SACE) as the statutory body for professional educators. An overview on Continuous Professional Teacher Development in South Africa by Richard Thwala, manager PD from SACE (2021), confirms that since the implementation of the CPTD system in 2007, almost all the educators have signed up but are not revisiting their CPTD accounts to update information or upload participation in PD programmes and points scored. As a result, the professional development of the teachers is not improving accordingly and the provision of PD is inadequate. The process of bridging the gap between national policy and pedagogy can be slow, which is echoed by Coe, Carl and Frick (2010:210). Furthermore, they recommend that the implementation of the CPTD should not be hurried; support to the teachers should be offered at school level; the CPTD system needs to find high-level professional development programmes that would influence teachers' classroom practice and

learner performance, and a strong foundation of service providers applicable to the needs of the area should be determined.

In addition, the ECE sector is fragmented and the training is varied amongst NGOs and only more recently, included in Higher Education Institutions. Higher education institutions need to make provision for the professionalisation of the existing workforce by providing Higher Certificates in Education, Advanced Diplomas in ECCE and online diplomas in ECCE so that under-qualified ECD teachers can also have a chance to upgrade their qualifications (Bipath, 2020:237). At present, Early Childhood teachers' initial professional training, let alone CPD, is historically unregulated. In terms of the South African Council for Educators Act, No. 31 of 2000 (SACE Act, 2000:13); "No person may be employed as an educator by any employer unless the person is registered with the Council". However not everyone working in ECE meets the minimum requirements to register, which is set at "ECE teachers with a minimum NQF level 4 ECE qualification employed in public schools in Grade R" (UNICEF, 2006:66). So, there is a conundrum for the sector, birth to four years, regarding regulation of professionalisation and through CPTD provided by SACE.

The problem, as Coe et al. (2010:210) mention, is that since the process of PD of teachers is slow, no clear research evidence can be found to show that high-level teacher PD programmes have been developed. Similarly, PD that is not readily available to all ECE teachers is a problem that is addressed by a new OTPD programme designed specifically for ECE teachers (Lipscomb et al., 2021:3). This study aims to explore how the process of teacher PD can be supported and benefit from an online model innovation which was further necessitated by pedagogy adjustments during the COVID-19 pandemic.

2.4.2 Practice of Professional Development

According to the research done by Haug and Mork (2021:7) in Norwegian schools, participating teachers remarked that it is useful in PD programmes to use the teaching materials in the programme as it adds to learning and makes it easier to apply in their classrooms. They enjoyed experiencing the exchange of practical tips and

experiences with participating colleagues which showed a focus more towards the positive effects of teacher PD. Popova, Evans, Breeding and Arancibia (2018:1) used their In-Service Teacher Training Survey Instrument to assess PD programmes in low- and middle-income countries. They found that teachers in low- and middle-income selected countries from the Caribbean, North Africa and Eastern Europe are not performing sufficiently in their schools. They succeeded below the 25th percentile standard compared to high-income countries (World Bank, 2017). According to Popova et al. (2018:21) the performance of teachers from these low- and middle-income countries' improved with the provision of resources such as storybooks and other reading materials (e.g., flashcards or word banks). In South Africa, ECE follows this worldwide trend of using CPD for teachers to stay effective in their teaching (Geldenhuys and Oosthuizen, 2015:203).

Teacher PD according to Schindler, Seidel, Böheim, Knogler, Weil, Alles and Gröschner (2021:1), aims to address teachers' beliefs, to provide practice strategies and to address their learners' learning. It is highly likely that change and learning will take place in teachers themselves. This teacher change can be seen as an interconnected process taking place in four different domains as depicted in Figure 2.1: Interconnected model of teacher change (Schindler, et al., 2021:2). Firstly, the *external domain* that sets the stimulus for change (e.g., conversations with colleagues, etc.). In this study, teachers must network with other teachers on online platforms such as cell phones and share ideas, ask for advice and share success stories in their classrooms. Secondly, the *personal domain* which includes teachers' individual personalities in terms of knowledge, beliefs and attitudes. In this study, teachers should enhance their knowledge of teaching practices, affirm their beliefs and adapt their attitudes where necessary. Thirdly, the *domain of practice* reflects the supposed professional experimentation where teachers are asked to challenge old teaching strategies and venture in new teaching strategies in their classrooms. The idea with PD and an online model is for teachers to evaluate their old teaching practices and venture into new teaching practices that will encourage them to share that with other colleagues. Lastly, the *domain of consequence* that focuses on outcome actions of the change process (e.g., the learners' learning development). The consequence of adapting to new teaching practices will enhance learner development.

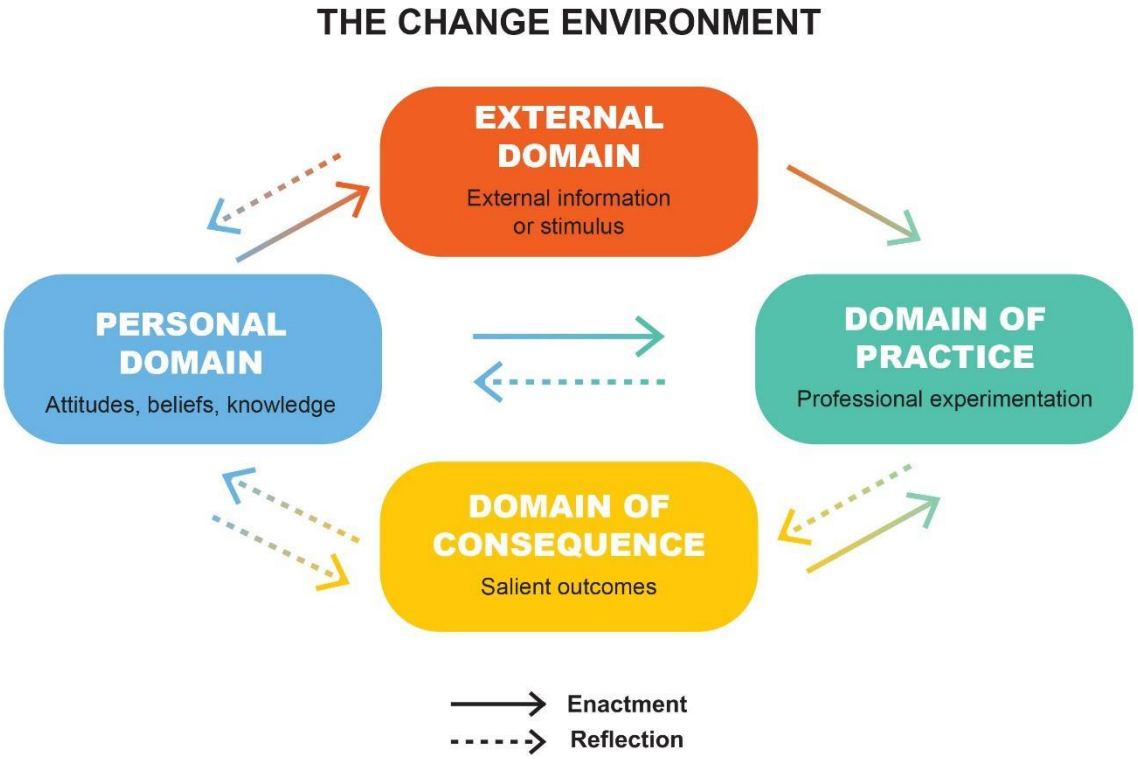

Figure 2.1: Interconnected model of teacher change (Schindler et al., 2021:3)

The emergence of the internet at the commencement of the 21st century brought about digital transformation in all spheres and necessitated that professionals continuously update their professional knowledge and skills. The ECE sector is not professionalised yet and therefore they must work within the context of a changing world and at the same time, with diverse needs in and for ECE as a priority. Early childhood teachers find themselves not fully skilled for their task to provide a well-informed programme for the young children (Bruguera, Guitert and Romeu, 2019:2).

For the sake of this study, teacher PD can be defined as the improvement of teachers' content knowledge and pedagogical content knowledge (Jita and Mokhele, 2014:1). PD is an important lever for improving teaching practice in ECE. This leads to higher classroom quality and for some researchers it is the most impactful way of improving children's learning (Schachter, 2015:2). Furthermore, is it an important foundation for enhancing the capacity of the teachers' teaching, inventing new teaching methods and ultimately showing how students improve their learning (Zhang and Liu, 2019:145). In

addition, online teacher professional development denotes to courses, workshops, or learning modules that are offered in an online layout for teacher PD (Powell and Bodur, 2019:21). The method in which teacher PD has transformed, is due to the fast development of information technology from face-to-face approaches to a blended style, a combination of online learning and contact teaching practice. This resulted in the change in subject matter, learning resources and settings for PD (Zhang and Liu, 2019:145). Technologies are exploited to empower people to work together in profoundly new ways. Practices that were previously impossible are now possible. People co-operate across predictable geographic, punitive organisational and sectoral restrictions (Littlejohn and Margaryan, 2014:1).

This research aims at proposing a model for online PD of early childhood teachers in South Africa to address the multiplicity of needs for PD of ECE teachers.

2.5 BENEFITS AND BARRIERS OF TEACHERS' CONTINUOUS PROFESSIONAL DEVELOPMENT

The education system was among the hardest-hit sectors with COVID-19's surge as a contagious disease according to Haider and Al-Salman (2020:1418) who focused on the higher education system in Jordan. Dramatic changes and governing measures were taken by higher education institutions necessitating immediate action for initiating crisis management. Education, business, social life and a world without barriers to knowledge, communication and interaction changed with the presence of internet in our lives. The use of digital technology has extended and a new term, namely online learning emerged (Zboun and Farrah, 2021:13). Online learning includes a variety of digital technologies such as the worldwide web, email, chat and conferences via video platforms. These required shifts have provided teachers with the prospect to engage in an online platform for PD training.

Online distance learning, because of its flexibility, gives adult learners the advantage of life-long learning (Kara, Erdoğdu, Kokoç and Cagiltay, 2019:5). It is a field of education where teaching takes place with the use of technology to learners who are not physically present. Flexibility is one of the top priorities for many teachers that have numerous obligations and responsibilities outside of their duties (Hoffman and

Lance, 2018:131). Furthermore, flexibility affords the teachers the opportunity to plan and make the necessary arrangements to be able to attend the PD programmes.

Haider and Al-Salman (2020:1419) argue that when teachers are not experiencing face-to-face lectures during PD programmes, they will start using additional resources, investigating and discovering their capabilities as independent learners. COVID-19 lockdown pushed educators to become more inventive in their teaching methods using technology as support in the process. Their techno-pedagogical skills (enhancing their teaching with digital technology) quickly improved with their newly acquired digital competence, which is advantageous for the teachers to be able to access PD training. Zboun and Farrah (2021:14) on the other hand, state that if these learning technologies are used wrongly, they are likely to undermine the role of digital technology and thus the failure of the learning process and the PD of the teachers. Poor integration of online learning may produce undesirable challenges ranging from poor communication, a sense of isolation, to a sense of frustration.

According to Haider and Al-Salman (2020:1422) the following are challenges of online learning as depicted in Figure 2.2 below. Technical and Internet problems were the most cited challenges raised and these included poor connection and slow Internet speed. Educators and learners are also faced with the lack of necessary and essential electronic equipment. Some of them had limited computer literacy and technical skills. Other challenges were course-related issues and workload where it is difficult to explain all material, especially practical lectures. Insufficient tools for student assessment provide another challenge where some educators felt that online assessment does not reflect the actual knowledge or skills of learners. Student commitment, awareness and psychology show that students appear not to be as committed and serious to fully participate in an online learning environment. Unclear visions and regulations are a problem faced where most university administration do not have clear procedures and instructions for the implementation of online learning. The research done by Zboun and Farrah (2021:17) shows that the online interaction between teachers and educator trainers is less than the interaction in the traditional class, which results in teachers feeling less motivated. Haider and Al-Salman (2020:1421) argue that teachers acquire new skills with online learning such as

creativity, critical thinking and problem-solving. Online learning helps teachers to be more independent and apply better time management.

Conversely, Haider and Al-Salman (2020:1420) show there is a strong emphasis on the advantages of online learning as shown in Figure 2.3 below. New effective teaching tools such as creating multimedia files for different courses can make a huge impact and contribution. This creates an interactive, stimulating and a motivating teaching-learning environment. The use of audio-visual tools for interaction and content delivery creates learner satisfaction. Acquiring new skills such as creativity, critical thinking and problem-solving through online learning is an important contribution to the learners' learning experience. A quick and practical solution for emergency situations such as COVID-19 showed that this unplanned and unprepared online learning experience has led to capacity building of staff who had to use new tools and systems to enable remote learning and flexibility in time and communication allow educators some time to conduct other activities such as research. All these advantages will be beneficial when teachers need to engage in OTPD.

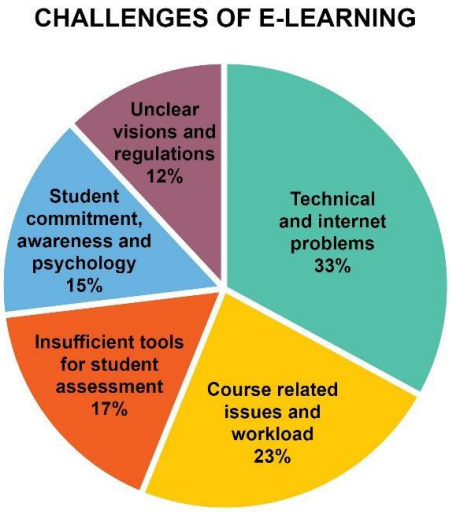

Figure 2.2: Challenges of online learning from teachers' perspectives (Haider and Al-Salman, 2020:1422)

Figure 2.3: Advantages of online learning from educators' perspectives (Haider and Al-Salman, 2020:1421)

Online learning ensures that remote learning is manageable and the learners can access the teachers and the teaching materials. It also reduces traveling and other expenses. The administrative task of recording contact sessions and marking attendance is another advantage of online learning. The learners become self-directed

learners and learn asynchronously at any time of the day (Mukhtar, Javed, Arooj and Sethi, 2020:5). According to Mitchell and Delgado (2014:379) advantages of online learning for many learners are the flexible hours and access to resources not readily available in all geographic areas.

South Africa needs competent people for economic development. There are several teachers from lower socio-economic backgrounds who are challenged to attend teacher PD programmes in person (Mashile, Fynn and Matoane, 2020:131). An online learning environment offers adult learners, who need to manage their own learning processes, a suitable opportunity to fulfil their own learning responsibilities through the flexibility it provides (Kara et al., 2019:6).

A growing need amongst adult learners is for an educational environment where they can regulate their own educational developments, easily share their ideas and sustain the balance between their educational developments and their private lives (Kara et al., 2019:6). Access to PD programmes is a challenge that teachers are faced with due to time restrictions, distance and finances. An online model for CTPD will allow early childhood teachers the opportunity and flexibility to attend programmes and maintain their PD whilst still meeting their other personal commitments.

2.6 SUMMARY

It was important to distinguish between ECE, ECD and ECCE as it creates much uncertainty as to its different meanings. Further, the necessity of professional development for teachers and for this study, early childhood teachers in South Africa, needed to be investigated. It was also necessary to understand the significance of the development of an online teaching and learning programme to ensure continuous teacher PD. The benefits and barriers of online teaching and learning discussed in the following chapter as part of the theoretical framework, will assist in designing a framework for an online teacher development programme. The theoretical and conceptual clarification in this chapter forms the basis for the final synthesis and integration of the study in chapter 6.

CHAPTER 3

CONCEPTUAL AND THEORETICAL REVIEW OF ONLINE PROFESSIONAL DEVELOPMENT IN ECE

3.1 INTRODUCTION

This chapter provides insight into the complex field of online professional development in ECE. It begins with an analysis of various adult learning theories, highlighting their applicability and consequences within the context of digital learning modalities. I then analyse the crucial relationship between these theoretical ideas and the changing context of online professional development, demonstrating how important these ideas are in influencing modern pedagogical practices. Additionally, I work through the complexities of programme design, revealing the strategic foundations and factors that support successful online teacher professional development programmes. Finally, I will introduce the Flipped ICT-CFT model, which served as the theoretical framing for this study.

3.2 ADULT LEARNING THEORIES

3.2.1 Overview

For the purpose of this study, relevant learning theories were reviewed since various adult learning theories provide important insight into how adults learn differently from young learners. Therefore, such theories and their associated concepts should be considered in the proposed model to improve and offer appropriate OTPD. It is assumed that adults want to be perceived as self-controlling. Their life experiences may be useful when learning and rejecting biases that may hinder the construction of new or modified knowledge. Adults learn best when they can see the relevance of what they learn. In other words, when adults clearly understand the relevance of what they are learning in the real world, it motivates and engages them more in the learning process. Pritchard (2017:2) states that some newly qualified teachers, when

introduced to fundamental ideas from adult learning theories as part of a higher degree programme of continuing professional development, wondered why this has not been covered in their original training. Although some teachers agreed that after some time teaching, the best time to look at learning theories is when it can be related directly to practice.

The learning theories for this study were chosen to have relevance for the PD of adults in the workplace which can also be applied to online training for ECE teachers. These theories can all be interrogated with the view of exploiting their unique offerings for application to online ECE teacher professional development. The selected learning theories include behaviourism, cognitivism, constructivism andragogy, heutagogy, paragogy, humanism and self-directed learning. An African perspective on educational theories was investigated, but it is important to note that according to UNESCO (1961:23 quoted by Nsamenang and Tchombe, 2012:10) there is no clear evidence that African educational authorities "revise and reform the content of education in the areas of the curriculum, textbooks and methods, so as to take account of the African environment, child development, cultural heritage and the demands of technological progress and economic development, especially industrialisation". Africa's education relates to that of the West which it copies without thought and does not match curricular contents with the learners' local realities. Considering the gap in an African view on learning theories, the mentioned Western adult learning theories will be considered contextually for the purpose of this study.

According to Nsamenang and Tchombe (2012:12) there is the hope that African education will not stay fixated on Eurocentric curricular ideals, but that a generative curriculum will be designed where the interests of the children and teachers should remain the centre of teaching and learning and with this generate new curricular content. Merriam (2001:3) stated that no single theory or model provides complete knowledge about adult learners, learning context and learner understanding. There are several learning theories (whether exclusively applicable to adults or not) that have relevance for the PD of adults in the workplace which can also be applied to online training for ECE teachers. Behaviourism, constructivism and cognitivism as the three

foremost theories of learning traditions in the 20th century, are firstly described and analysed to explore their implications for adult online teaching and learning. Thereafter andragogy, humanism and self-directed learning theory perspectives are explored. Hence, these various adult learning theories will be analysed and explored to ascertain their implications for adult online teaching and learning, following guidelines outlined by Arghode, Brieger and McLean (2017:594). According to Harasim (2017:3) “there is a need to reflect our theory of learning and to rethink and reassess our teaching practices and pedagogical approaches in relation to the opportunities afforded by online technologies.”

The lack of attention to the adult learning principles may provide some clarification of why professional development has not understood proposed changes in early childhood outcomes. It is uncertain if analyses of early childhood professional development have integrated theories that speak to how adults learn, namely: how adults gain and use knowledge to inform practice, how adults adjust their beliefs and how adults alter the way in which they work with young children. Professional development is a chance for teachers to learn and improve on aspects of research-based practices through the development of knowledge and reflective practice. Current professional practices can be improved and examined by facilitating the learning of early childhood teachers. The literature investigating professional development for early childhood educators does not specifically address principles and practices related to how adults learn (Weber-Mayrer, 2016:34). There is a lack of empirical research derived from adult learning theories more generally concerning adult teaching practices. From this it is not clear whether explicitly attending to these principles and practices during teacher professional development can be associated with greater increases in engagement in professional development, gains in knowledge and changes in beliefs (Weber-Mayrer, 2016:35).

The nine selected theories of learning are briefly outlined for their relevance to digital learning in an African context, which is the context of the PD in this study. Thereafter, the theories are portrayed in Table 2.2 below to elaborate on their fundamental principles, the relevance of the theories to understand digital learning and the

implications that each theory has for the ICT-CFT theoretical framework of this study. The learning theories refer to educators (facilitators) and learners (teachers), where educators are those offering PD and learners are the teacher participants.

3.2.2 Behaviourism

Behaviourism focuses on the idea that all behaviours are learned through interaction with the environment. Educators can influence the way learners behave and can reinforce behaviour positively by adding rewards. This will result in learners working harder to be rewarded. Behaviourism was one of the first learning theories that made use of a systematic method to describe learning, psychology and human action, presenting a description that could be analytically confirmed (Harasim, 2017:11). Ivan Pavlov (1849–1936) is seen as the intellectual creator of the pre-behaviourist learning theory. According to behaviourism, learning is achieved by being based on external stimuli and following responses (Arghode et al., 2017:595).

In the theoretical framework ICT-CFT knowledge acquisition is the focus of behaviourism. Behaviourism plays an important role in creating a reaction cycle in the learners through the design of activities (see Table 1). It concerns the apparent change in behaviour (Guney and Al, 2012:2335). Behaviourism is limited and rigid in its perspective with no understanding of thinking processes in the brain. The human brain is seen as irrelevant, a black box. For this study, it is important to focus on human action to get to know the challenges, skills gaps and expectations early childhood teachers experience in the continuous process of their professional development to see if certain responses from the teachers will influence the design of the PD programme. To this end, the researcher aims to enquire about the teacher-participants' experiences of attending PD programmes to elicit responses about the positive as well as negative influences they encountered during previous professional development programmes. It is also important to measure the needs of the early childhood teachers for professional development and what information they would want to be included in the programme.

3.2.3 Cognitivism

In the early 1920s, some constraints such as interactivity between educator and learners, in the behaviourist framework of learning came to the fore. Behaviourism was unable to explain most social actions. Behaviourists would believe only what they perceive and the ability to quantify what was witnessed (Harasim, 2017:11). This led to the rise of cognitivism. According to Allen (2007:30), Wolfgang Kohler was the initiator of cognitivism and he theorised that learning is when an individual has an understanding that shows a relationship between two separate elements of a larger problem. Learning is a cognitive internal process involving memory, thinking, reflection, abstraction and motivation to the cognitivists (Brieger, Arghode and McClean, 2020:324). Learners are encouraged to actively participate, developing their own goals and activities (see Table 1). This links to Gestalt psychology that has a heavy foundation in cognitive theory where the Gestalt theorists believe learning is an individual event about discovering relationships between things (Allen, 2007:29).

Technology that could change the mind and represent knowledge is problematic for cognitivism. Cognitivism emphasises the importance of internal mental processes and views the mind as an information processor, so technology that directly manipulates or alters the mind challenges the foundational assumptions of cognitivist theories. Cognitive scientists rushed to develop educational technologies such as intelligent tutoring systems (ITS) and artificial intelligences (AI) to imitate the human mind through computer programmes (Harasim, 2017:12). This has relevance to this study as a model for OTPD will aid the human mind in acquiring knowledge at a time and place that suits the teachers best. Cognitivism, a learning theory different from behaviourism, also believes that the key role of the learner is to absorb whatever the teacher presents. The objective of this study is to emphasize that the participants (teachers) should not just integrate what the teacher (PD facilitator) teaches them, but to investigate and make their own decisions and contributions towards their own PD. This can be done through knowledge acquisition in online interaction with others.

3.2.4 Constructivism

The constructivist paradigm regards knowledge as socially constructed via authentic learner experiences rather than acquiring it. Constructivism describes learning as a process rather than an event, in which learners construct new skills and knowledge. Teaching involves construction of knowledge rather than lecture-based knowledge imparting (Guney et al., 2012:2335). The constructivist approach is learner centred. A learner's past knowledge and experiences are enhanced by adding new knowledge. This learning process is unique, authentic and active. Learning takes place by doing or enacting, scaffolded learning and collaboration (Blaschke, 2016:4).

During a period of educational reform, constructivism rose in the United States of America which emphasised how the individual made meaning of the world (Harasim, 2017:12). Constructivists believe that knowledge creation includes both intellectual energy and a social edge (Merriam, 2001:5) (as indicated in Fig. 3.1: The theoretical framework of this study: ICT-CFT theoretical framework). According to constructivists, teaching should inspire learners to create knowledge meaning that improves their learning (Arghode et al., 2017:595). This knowledge-meaning creation for the learner is accomplished by incorporating contextual elements into learning activities, encouraging knowledge construction, including perceptions and supporting collaboration, conversation and engaging dialogue, inquiry and problem-solving (Blaschke, 2016:4). According to Hase and Kenyon (2013:21) in (Blaschke, 2016:4). learners are "creative, actively involved in their learning and there is a dynamic rather than a passive relationship between the teacher and learner".

Moreover, heutagogy's constructivist viewpoint has the belief that students construct their version of reality by using past and current knowledge and experiences. The use of flexible and blended heutagogical models of knowledge-creating enables them to deal with real issues of work, family and study while developing attributes needed for today's world (Moore, 2020:8). As the term constructivism implies, through interactions with one another, the community and the environment - knowledge construction is created. Participants in this study will have the opportunity to network, share ideas and learn from each other's experiences through online interactions and chats during their PD.

3.2.5 Andragogy

Andragogy and self-directed learning (SDL) theory were defined by Malcolm Knowles in 1968 as “the art and science of helping adults learn” (Knowles, 1980:43). Andragogy is based on six main assumptions according to Knowles. The first assumption is self-concept where adult learners are self-directed and independent. Second, is the role of experience where adult learners learn effectively based on their experiences. Third, is learners’ readiness to learn, learn for self-satisfaction. Fourth, is orientation to learn where adults want to implement what they learn in real life situations. Fifth, is internal motivation, learners believing in themselves. Last, is the need to know where the importance of learning is identified (Joshi, 2017:8). According to andragogy the adult learner has a self-directed self-concept and can direct their own learning. The adult learner has a vast amount of life experiences that contribute to their learning. Their learning needs are linked to how their social roles change in the learning environment. Their learning needs are problem-centred and they use the knowledge right away so that learning takes place through internal rather than external influences (Merriam, 2001:3). Adults’ self-concept affects their role as learners as they may have the perception, because of previous experiences they had, that they are not so clever regarding academic work. This barrier can be reduced by showing them how adult learning activities such as teacher PD, can be different and enjoyable (Knowles, 1980:46). The implementation of Knowles’ framework is often described in studies, but how it affects learner outcomes is not shown, nor does it test expectations or principles implicated by andragogy. To measure andragogy proves to be challenging as the nature of learning is individual (Weber-Mayrer, 2016:25).

According to Arghode et al. (2017:596) learners (for this study, the teachers), will develop from being dependent to independent learners as the learning progresses. Knowles (1980) further says that adult learners differ from young learners in their need to know why they should learn something; therefore, they need intrinsic motivation, and they want to know how learning will help them. Joshi (2017:7) supports this idea by stating that adults only learn successfully when their inner motivation to develop a new skill or acquire a particular type of knowledge is strong. The basis of adults’ learning includes prior knowledge and experience. Adults are focused and want to oversee their own journey. Andragogy is an approach in hands-on learning where

adults discover their learning in real life situations using their own experiences and knowledge in the classroom and practise it in their lives and careers (Joshi, 2017:8). Andragogy has been critiqued for disregarding cultural and social influences on adult learners. This was because researchers felt the learning process is so complex that it is difficult to identify approaches that are “likely to always produce more effective results” for different groups of learners (Merriam, 2001) because of their individual and social structures. It is the task of the facilitator of the adult learning experience to include adult teaching practices such as previous experiences in adding to current, cultural and social experiences within the learning setting (Weber-Mayrer, 2016:25). According to Joshi (2017:11) adult learners should be provided with opportunities to be actively engaged in participatory learning and to apply what is learned. Current higher educational institutions realised that moving from a pedagogical level of teaching to an andragogical level is important as teachers must be involved in their own learning in this technology driven world (Joshi, 2017:7). The fact that educational activities can be enriched and prolonged with the use of technology add value to this andragogical approach (Joshi, 2017:10). The participants in this study will have to take accountability for their own learning and development and furthermore, form their own concepts and ideas. Working in an online environment is a conducive atmosphere for self-study and self-development.

3.2.6 Heutagogy

Heutagogy is a suitable learning framework for 21st century learners and educators who want to play an active role in their learning process. Technology can drive heutagogy by developing lifelong learning ecologies using digital media (Blaschke, 2016:1). Heutagogy is a concept created by Hase and Kenyon (2000) as an instructional approach that underlines self-determined learning as seen in table 2.1: Basic principles of heutagogy. Heutagogy can be seen as a continuum and reinterpretation of andragogy (Moore, 2020:2). The teacher fulfils the role of coach, scaffolding the learning process and guiding the learner from the known to the unknown (Blaschke, 2016:4). Heutagogy not only focuses on knowledge acquisition but also on skills development. The learner is seen as, “the major agent in their own learning, which occurs as a result of personal experiences” (Hase and Kenyon,

2007:112) as quoted by Blaschke and Hase, 2019:27). The learner determines what and how they learn; taking control over their learning by determining their learning as well as how they are assessed (Blaschke, 2016). Heutagogy and technology are entangled in a symbiotic relationship. Technology such as smartphones and web-based applications has made it easier for students to create content. Using social media, facilitators can provide scaffolding and synchronously support learner independence. Twitter, as an example of a social network service, can be used by students to post questions in real time and receive responses from their classmates. Virtual learning environments can be created with technology, thus giving students the opportunity to take a virtual tour for example at their own pace, of a classroom using their laptop or phone (Moore, 2020:7). This proves to be significant for this research as it will create a platform for teachers to communicate and share ideas, challenges and successes amongst each other.

The COVID-19 pandemic demonstrated how impactful online learning can be. Society became increasingly technology-driven and everybody needed to adapt quickly. Learning was seen as a continuous and not a static process. Learning is viewed as lifelong learning. More learner-centred instructional approaches are necessary to prepare for lifelong learning (Moore, 2020:2). Learning activities framed by a heutagogical learning environment can be developed and created as shown in Figure 3.1 below.

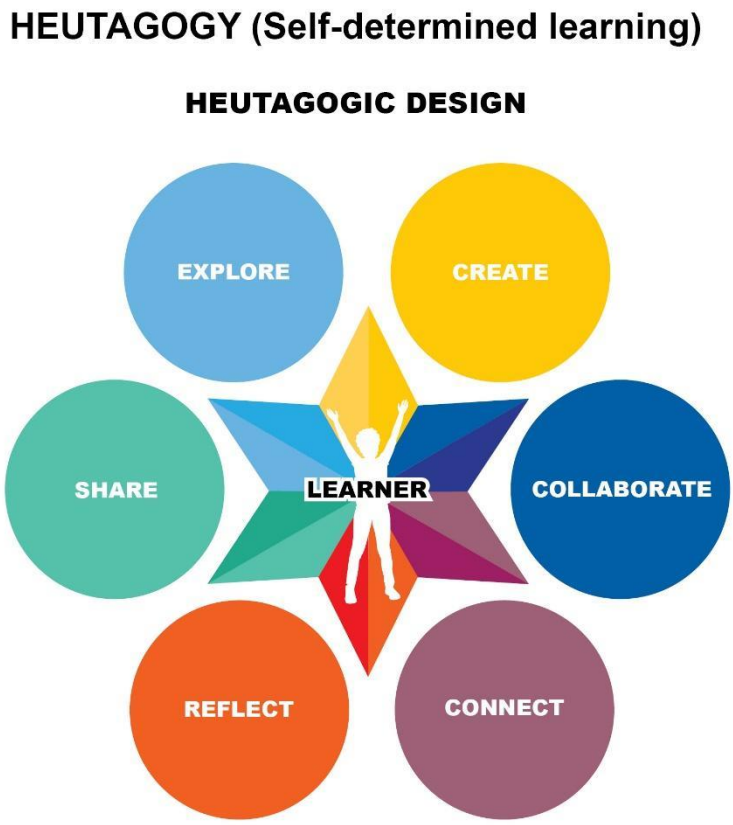

Figure 3.1: Heutagogic design elements (Blaschke and Hase, 2019:31)

It is important for this study to show how these heutagogic design elements can be supported by using technology. Learners must *explore,* with guidance, sources of knowledge such as digital libraries and magazines. The internet is the ideal environment for self-determined exploration. Social media such as Twitter and Facebook, provides opportunities for learners to contact other teachers for their expert ideas. Learners must feel free to *create* in the online environment where they can use a variety of tools, for example creating mind maps of their learning. Imperative for this study is that the learners (teachers) will be able to create new ways of teaching. The third element, to *collaborate* encourages the teachers to work together toward a common goal, to solve problems together and reinforce their knowledge by sharing their own life experiences with each other. To form connections is an important aspect of heutagogy. This is made easy with social media where the learners (teachers) can *connect* in an online space and *share* ideas with other teachers across the country. Lastly, the teachers need to have an opportunity to *reflect* in the heutagogic environment. Through reflection, new learning takes place and previous learning is consolidated (Blaschke and Hase, 2019: 35).

The basic principles that form the heutagogical design are described in Table 3.1.

Table 3.1: Basic principles of heutagogy (Blaschke and Hase, 2019:28).

Principles of heutagogy	Description
Learner-centred and learner determined	The learner is at the centre of all heutagogical practice. The learner is self-motivated and autonomous.
Capability	The learner can use own competencies.
Self-reflection and metacognition	Self-reflection occurs in a holistic way. This includes what they learn, how they learn and the way in which it is learned.
Double-loop learning	Learner reflects on what they have learned but also on the way in which this new knowledge can influence their values and beliefs system.
Non-linear learning and teaching	The learners choose their own path to learning and not the teacher. Learners make sense of the world and behave purposefully.

3.2.7 Pedagogy-Andragogy-Heutagogy continuum (PAH continuum)

Heutagogy shows a shift from pedagogy and andragogy in the instructional approach to heutagogy. The change is from teacher-centred to learner-centred approach. This implicates an increase in learner autonomy and a decrease in teacher control (Moore, 2020:9).

Figure 3.2: Levels of learner autonomy (Moore, 2020:10)

According to the figure above, pedagogy is the lowest level of learner autonomy. The facilitator has a high level of control. The facilitator's requirement is to take the learner through the curriculum. The focus is on transferring knowledge. Andragogy continues to situate the learner in single-loop learning where the facilitators take on the role of guiding the learners. The student identifies a problem, acts upon it which produces a reaction and then begins a new issue. This provides the student with more flexibility, but the facilitator will still have a level of control. In the final phase, namely heutagogy, learners are in control of their learning and the facilitator is less involved. Double-loop learning is fully in action where the learner shows competency and capability. These elements are important as it addresses the needs of adult learners in complex and changing work environments (Moore, 2020:8).

This PAH continuum is important for this study as it enhances the idea that adult learners must be in control of their own learning and take responsibility thereof.

3.2.8 Paragogy

Paragogy is defined as peer-to-peer learning and teaching (Corneli and Danoff, 2011:2). The concept is derived from “para” alongside, “-gogy” leading. The principles of paragogy are a product of Knowles’ principles of andragogy on the explicit context of peer-based learning. Paragogy focuses on the learning taking place in peer supportive contexts to accomplish self-directed learning (Riandi, 2021:295). Best practices in classroom-based and online learning emphasize learner autonomy and interactivity (peer-to-peer).

Paragogy’s critical focus is on peer learning as extension of critical and constructivist approaches. Using information, resources and help from other learners build on and improve their learning (Riandi, 2021:293). Knowles’ five grounding principles of the peer-based learning context inform this still-developing framework. First, changing context as a decentred centre where the learning context is a dynamic space co-created by peer networks including digital networks. Second, meta-learning as a font of knowledge, where learning how to learn is the essential skill. Third, peers provide feedback that would not be there otherwise. Fourth, learning is distributed and non-linear, peer-to-peer. Fifth, learners critically reflect on learning goals and outcomes that are relevant to them and develop expertise via deliberate practice (Corneli and Danoff, 2011:3).

3.2.9 Humanism

Psychologists Carl Rogers and Abraham Maslow are generally seen as the founders of modern humanistic learning theory (Johnson, 2014:1). Humanism studies a person as an individual that grows and develops over their life expectancy. Abraham Maslow said that people are born with a set of basic needs, namely physiological and biological, belongingness or love, safety, self-esteem and self-actualisation (Guney et al., 2012:2338). According to Johnson (2014:4,5) all humans tend to grow, learn and develop fully. The principle of human education is firstly, that students’ learning should be as self-directed as possible. Secondly, the subject matter to be learned should be

relevant to the personal interests of the students and thirdly, the full spectrum of the human experience should be included in the educational experience. Humanism underlines, just like andragogy, that adults must take ownership of their learning. The learners are responsible for their learning and educators are facilitators (Arghode et al., 2017:598). Humanism is concerned with personal growth and enhances rather than diminishes academic learning, intellectual growth and the development of basic skills. Personal connections are made to students' lives, emotions and experiences (Johnson, 2014:2). For this study, the teachers should realise that the success of their PD studies lies in the fact that they take accountability for their own learning. To determine their specific expectations from the PD is of the utmost importance.

3.2.10 Self-directed learning (SDL)

Knowles (1975:18) describes self-directed learning as "a process in which individuals take the initiative without the help of others in diagnosing their learning needs, formulating goals, identifying human and material resources and evaluating learning outcomes." According to Blaschke (2016:4) the more mature a learner becomes the more self-directed the learner will be about their own learning.

Not a learning theory per se, SDL is a method in which individuals acquire new and first-hand understanding, awareness, opinions, skills, attitudes and knowledge of learning methods (Guglielmino, 2013). Self-directed learning is a vital concept in the research and training of adults, with three overlapping scopes, namely: self-monitoring, self-management and motivation (Garrison, 1997) as depicted in Figure 3. Several terminologies "such as 'autonomous learning', 'independent learning', 'lifelong learning' 'self-direction in learning', 'self-initiated learning', 'self-plan learning' and 'self-teaching' have been related to SDL" (Du Toit-Brits, 2017:52). Professional development of teachers will benefit from Garrison's model of self-directed learning as the learners (the teachers in this case) are motivated to assume personal responsibility and control of the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningfulness for learning outcomes (motivation) (Shahrouri, 2016:38).

According to Manning (2007:108), Knowles states five key statements which underlie self-directed learning. Firstly, the human being grows in capacity and need to be self-directed. Secondly, learners' experiences should be developed with specialist resources. In the third place, learners need learning to perform their life task. Fourthly, learners' learning is task or problem centred. Lastly, learners are motivated by internal motivations such as the need for self-esteem. It is important to know that often early childhood teachers become less willing to take responsibility for their own learning (Weber-Mayrer, 2016:24). This creates a gap to take into consideration when planning professional development for early childhood teachers.

Individuals plan, accomplish and evaluate their learning experiences without the help of others and so take initiative in their learning. For this study, it is important that the participants are aware of their expectations and can evaluate their learning experiences. They need to follow their own development and progress.

3.3 AFRICAN PERSPECTIVES ON ADULT LEARNING

African Philosophy of Education (APE) is a way of thinking that highlights reflective creativity to balance the interests of an individual and that of the community (Majani, 2021:140). Moral norms and values such as generosity, kindness, courtesy and caring for others are crucial to this philosophy. Education must therefore have a moral purpose, while educators of adult learners must be guided by principles of andragogy and the classroom practices must be formed by *ubuntu*. *Ubuntu* is an African lifestyle of sharing, togetherness and a feeling of familyhood (Majani, 2021:141). Through oral culture, proverbs, riddles and other traditional means of knowing, learners are taught to abide by social and cultural values of African people.

African Education systems need to promote diversity in teaching and learning approaches that enable established specialisation. There is a need to review the African education system to include practical subjects like food crop production, animal nurturing and marketing practices, health, etc. in the curriculum rather than continue the emphasis on western style education that prepares Africans for white-collar jobs in their agrarian economies (Nsamenang and Tchombe, 2012:32). It is important for

this study to keep in mind that the teachers' life experiences should be taken into consideration when designing professional development programmes.

Insufficient funding for research in African educational institutions and unsatisfactory attention to PD has led to a crisis in academic staffing just when teachers are most needed to teach the increasing numbers of students. The fact that teachers' workloads increased because of the ratio of teacher-learners, together with inadequate salaries, undersupplied personnel management and lack of research opportunities makes staff retaining and recruitment increasingly difficult (Nsamenang and Tchombe, 2012:27). This is in contrast with research such as Powell and Bodur (2019:19) who report that the aim worldwide is to improve teacher excellence through PD to enhance the learning of students. This seems impossible with the intensified workload and the teacher-student relationship that is imbalanced. This imbalance lies in the fact that the teacher is usually the leader in the learning process, is expected to know everything and therefore is afforded more "power" in the relationship than is the case with the student. The fragility in this delicate relationship should be dealt with carefully.

The East African Madrassa programme aims to place early childhood teachers in the community where the children grow up to assist in providing the necessary care and education (Nsamenang and Tchombe, 2012:119). This links to cognitivism where the adult teacher forms an understanding between the environment of the child and how to make it part of the learning process. Other innovative programmes such as 'The Little teacher' programme in Botswana involves the older children supporting the education of the young children. This is a form of humanism where the learners take responsibility for their own learning and the teachers are the facilitators. The Senegalese 'Grandmother Project' recognises the role of grandmothers in children's education and early childhood teachers need to form a bridge between the home and the school (Nsamenang and Tchombe, 2012:120). The saying "It takes a village to raise a child" is so true. This reflects the belief that the responsibility for raising and nurturing a child extends beyond just their immediate family. It suggests that the broader community, including neighbours, friends, teachers and other community members, all play a crucial role in providing support, guidance and collective care to ensure the well-being and development of a child. The saying quoted above, emphasises the importance of communal involvement and highlights the

understanding that a child's upbringing is influenced by the collective efforts of the entire community.

Cunningham et al. (2015) integrated five adult learning practices included in adult learning theories in the teachers' professional development. However, the extent to which these theories contributed to influence early childhood educators cannot be determined from that study. No studies to date have empirically analysed the degree to which key adult teaching practices keep up terms of promoting adult learning outcomes, particularly with respect to promote changes in early childhood teachers' engagement, knowledge, beliefs or practices (Weber-Mayrer, 2016:36).

Countries around the world aim to enhance teacher quality and PD to improve student learning outcomes necessary for a world-wide society. The challenges for this to be attained are intensified when access to quality professional development is affected by time, financial and geographic constraints (Powell and Bodur, 2019:19).

3.4 THE LINK BETWEEN ADULT LEARNING THEORIES AND DIGITAL LEARNING

The relevance of adult learning theories to digital learning is highlighted below in Table 3.1. The major psychologists and educators associated with the different adult learning theories are identified and the fundamental principles of each of the learning theories stated. For this study, it is important to show the relevance of each of the selected adult learning theories to the understanding of digital learning since the pedagogy for PD will be within a digital space. Teachers' professional development programmes must take into consideration the way in which adults learn to be more effective in their teaching.

Table 3.2: Relevance of Adult learning theories to digital learning

	Behaviourism	**Cognitivism**	**Constructivism**	**Andragogy**	**Heutagogy**	**Paragogy**	**Humanism**	**Self-directed learning theory**	**African perspective on learning – Indigenous education**
Major psychologists and educators associated with the learning approach	**Ivan Pavlov**, (1849-1936) intellectual founder of Behaviourism **Sigmund Freud** (1856-1939) **B F Skinner** (1904-1990) **John B Walker** (1916) – first behaviourist	**Wolfgang Kohler (1887-1967)** founder **Jean Piaget** (1936) Piaget rejected behaviourism and stated that learners are far more active in the learning process	**Jean Piaget** (1896-1980) **Lev Vygotsky** (1896-1934) 20th century	**Malcolm Knowles** (1913-1997) German educator	**Hase and Kenyon (2000)**	**Knowles'** grounding principles inform this still-developing network	**Abraham Maslow, Carl Rogers, James Bugental** (early 1900s)	**Malcolm Knowles (**1913-1997) Defined SDL **D.R. Garrison** (1997) Created model for SDL- builds on Malcolm Knowles' theory of Andragogy	
Fundamental principles	Learning involves: ● External stimulus and responses ● Plays an important role designing activities which creates a reaction cycle in the learner	Learning involves: ● Cognitive internal processing information ● Memory, thinking, reflection, abstraction, motivation individual event discovering relationship between things ● Heavy foundation in Gestalt psychology	Learning involves: ● *Knowledge creation* - both mental energy and a social interface in a joint enterprise with facilitators and peers	Learning can be: ● Achieved with or without help ● "Art and science of helping adults learn" (Knowles, 1980:43)	Learning involves: ● Learner-centred and learner-determined ● Capability ● Self-reflection and metacognition ● Double-loop learning ● Non-linear learning and teaching	The principles of Paragogy are a product of Knowles' principles of andragogy: ● Peer-based learning ● Meta-learning – learning how to learn ● Peers provide feedback ● Learning is distributed and nonlinear, peer-to-peer ● Learners critically reflect on	Learning is: ● A personal endeavour towards fulfilment ● Adults take ownership of learning	Learning is: ● Social interaction ● "Art and science of helping adults learn" (Knowles, 1980:43)	Learning is: ● Ways of teaching and learning in Africa are based on indigenous knowledge collected by Africans over centuries (Nsamenang, 2012:24) ● Parents, especially mothers, are the primary teachers and educators (Nsamenang, 2012:43) ● To create unity and

	Behaviourism	Cognitivism	Constructivism	Andragogy	Heutagogy	Paragogy	Humanism	Self-directed learning theory	African perspective on learning – Indigenous education
						learning goals and outcomes			agreement in society ● To prolong the cultural heritage of the ethnic community and reserve its boundaries ● to instil feelings of group authority and communal living ● to prepare the young ones for adult roles and status
Relevance of the theories to understand digital learning	● In ICT-CFT theoretical framework *knowledge acquisition*= focus of Behaviourism ● Aim of teacher learning – learned behaviour is remembered ● Proper conditioning created by teacher	● Aim to make learning engaging, motivating, actively participating developing own goals and activities through online interaction with other teachers ● Information presented role acquisition, in organised	● Aim of learning: to facilitate *construction of knowledge* ● Focus: to generate sense from experience ● Teacher educators to: facilitate and agree upon	● Allowing adult learners to learn autonomous, directing own learning, internal not external influences (Merriam, 2001:3) ● Teacher educators' role: to support teachers as learners	● Aim of learning for technology is to drive by developing lifelong learning ecologies using digital media heutagogy and technology are entangled in a symbiotic relationship ● Virtual learning environments are created	● Peer-based learning co-created by peer networks including digital networks	● Aim of learning – to support self-actualisation, self-awareness, independence, teachers as learners' own responsibility ● Focus of learning = feelings, perspective, affective domain	● Aim of learning: to improve learning through *interactions* ● Focus: to generate experiences, affective and cognitive domain ● Teacher educators' role: to	● Aim of learning is survival which is for protection, acquisition of food and shelter and ensuring successful reproduction ● Digital learning does not play a role in this

	Behaviourism	Cognitivism	Constructivism	Andragogy	Heutagogy	Paragogy	Humanism	Self-directed learning theory	African perspective on learning – Indigenous education
	educators for teachers as learners to achieve learning – memory, stimulus and response	manner, memory, age-connected learning and intelligence	meanings with teachers as learners ● Encourage teachers as learners to create meaning causing improved learning ● Learning = generating sense from experience		● Online environment created such as mind maps to collaborate with others (Blaschke and Hase, 2019:33).		● Teacher educators to facilitate	provide support ● Teacher as learner: acquire new and first-hand understanding, awareness, opinions, skills and knowledge (Guglielmo, 2013)	● Boys and girls taught separately ● Every member in community involved in educational upbringing of the child
Implications for the ICT-CFT theoretical framework of this study	● Teacher as researcher and life-long learner ● Digital knowledge acquisition	● Teachers: self-regulated learners ● Access and share resources online	● Teachers' knowledge creation through self-management	● Teachers acquire new pedagogical knowledge	● Teachers as networker taking control of own learning. They determine what and how they learn ● Teachers as explorers	● Teacher as co-creator of knowledge alongside peers	● Teacher as researcher and lifelong learner using digital literacy	● Teacher as networker – networking in online chatrooms ● Knowledge creation	● Teachers are part of the society where unity and consensus are important

The fundamental principles from these adult learning theories show that adult learning is about stimulus and response, processing of information and creating of knowledge with or without help. The teachers need to take ownership of their learning. One way of doing so is through professional teacher development programmes. The importance of continuous teacher development will be discussed in the next section.

Cognitivism started as a cognitive internal process because of the behaviourist idea that the brain is irrelevant in the learning process. The behaviourists only believed in what they could see. Behaviourism is the most rigid adult learning theory in terms of being teacher-centred where the learners must work towards receiving rewards from educators for their behaviour and learning that took place. According to the cognitivists learners actively participate in their learning that involves cognitive processes such as memory, thinking, reflecting and abstracting. Cognitivists also believe as the behaviourists do that the key role of the learner is to learn whatever the educator presents. The difference is to emphasize that the learners (teachers) should not just integrate what the educator teaches them, but to investigate and make their own decisions and contributions.

Despite this, the key role of the learners is still to absorb whatever the educator presents. Constructivism, andragogy, heutagogy, paragogy, humanism and self-directed learning all show that learning takes place as self-directed processes where the learner is the major agent in their own learning. Behaviourism and African perspectives form an understanding between the environment and how to make it part of the learning process. What is important for this study is to incorporate learners' own real-life experiences as seen in andragogy, constructivism and heutagogy.

Limitations that can be identified are that behaviourism is regard as limited and rigid in terms of showing no understanding of thinking processes in the brain. The brain is seen as a black box and irrelevant to any learning process. There is also a lack of interactivity between the educator and the learner. The educator oversees the learning process. In andragogy, previous perceptions adults may have about their own

competencies may affect their view of their aptitude. Andragogy is also critiqued for disregarding cultural and social influences on adult learners.

For this study, the importance of heutagogy and paragogy cannot be stressed enough as it shows the interaction between the learners clearly. It contributes to ECE teacher training by promoting learner-centred approaches that empower teachers to become self-directed and reflective learners, fostering their ability to adapt and innovate in the ever-changing field of ECE. These pedagogical frameworks encourage teachers to take ownership of their learning, collaborate with peers and engage in self-directed inquiry, leading to professional growth and enhanced teaching practices in the field of ECE.

3.5 PROGRAMME DESIGN: ONLINE TEACHING AND LEARNING

Building a model that sustains the integration of digital technology into the teaching process is critically necessary (Almerich, Orellana, Suárez-Rodríguez and Díaz-García, 2016:112). Since the first few years of online pedagogy, there have been recommendations about using technologies to improve cooperative learning opportunities (Chickering and Ehmann, 2002:1). Lately, critics have identified several best practice ideologies, such as communicating certain objectives and expectations, integrating numerous active learning opportunities, providing regular, quick and productive feedback and creating teacher support resources. People are no longer merely using online content but are now encouraged to actively join online working groups and contribute to the creation of relevant content (Dunlap and Lowenthal, 2018:80).

According to Schachter (2015:5), the current state of ECE shows that despite the increasing agreement that Professional Development (PD) is important, there isn't a strong theoretical argument that informs ECE Professional Development. Previous reviews of PD have concentrated on explicit topics, such as care for young children, not offering a thorough examination of the whole corpus of PD. Moreover, the quality of PD in ECE is lacking instruction in content areas such as math, science, or children's

socioemotional development (Schachter, 2015:4) and there is no obvious understanding of how researchers establish and are responsible for impact related to their PD. This emphasises the theoretical gap that an online PD model evolving from this study would address.

One way ahead in advancing professional learning is to incorporate three critical dimensions, namely work practices, learning processes and technologies within the single domain of 'Technology-Enhanced Professional learning' (TEPL) (Littlejohn and Margaryan, 2014:2).

The three critical dimensions mentioned in the TEPL model, depicted in Figure 3.3, enhance the structure of an online professional development programme and contribute on different levels to this model. Firstly, *work practices* where the work is distributed to people with different forms of expertise, from detached geographic, sectorial, or disciplinary locations where they work on a shared work problem, connected via the internet. Secondly, *learning processes* where with the aid of internet teachers can access feedback from educators and peers and capture knowledge otherwise not shared. Thirdly, *digital technologies* provide realistic environments for professional learning. Presenting learning activities that imitate real-world work situations and suggest an opportunity for individuals to investigate and not succeed in a safe environment seems a favourable way to motivate people to engage in professional learning (Littlejohn and Margaryn, 2014:9).

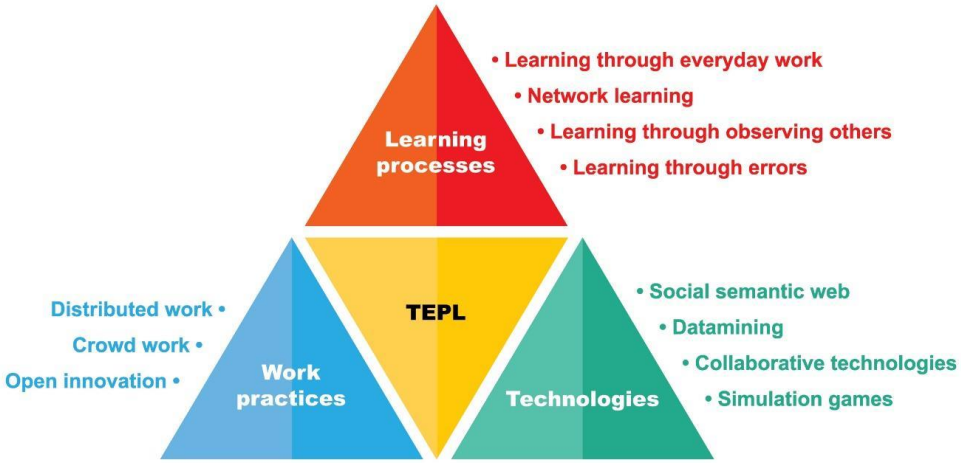

Figure 3.3: Technology-Enhanced Professional Learning (Littlejohn and Magaryan, 2014:3)

These three dimensions from the TEPL model, namely work practices, learning processes and digital technologies, contribute favourably to the development of an online teacher professional development model. The online model that this study intends to produce, comprises the following programme design elements: visual stimuli; clear learning goals and objectives; real world eLearning activities; relevant multimedia; eLearning assessments; supplemental links to online resources; and regular feedback in feedback systems (Brinthaupt, Fisher, Gardner, Raffo and Woodard, 2011:515). Visual stimuli in the form of videos, blogs, wikis and discussion forums can help the teachers in the learning process. Clear learning goals and objectives will guide the learning process for both the teacher and the educator. The teacher can add their own goals and objectives to make this a more personal experience. eLearning pedagogy provides the best practices in hybrid (combination of traditional face-to-face classes and online learning activities) and online teaching and learning and overcomes the barriers where they do not meet in person. Constructive and timely feedback are important factors to include in an online professional development model. This will be used to address teachers' skills gap and expectations, tackling challenges experienced by the teachers, the role of adult

learning theories and the different roles teachers play such as networker, researcher and lifelong learner and the teacher as innovator. The online teaching and learning will be the platform and/or pedagogy.

All these design elements for an online teacher professional development model are informed by the available digital technologies. According to Abdel-Basset, Manogaran, Mohammed and Rashdy (2018:7) the Internet of Things (IOT) has a significant influence on the education field. They state “IOT is not a singular technology, but it’s a blend of various hardware and software technology” (Abdel-Basset et al., 2018:4). The traditional teaching procedure and the infrastructure of education have been changed by IOT.

At the University of Padova efforts were made to use and apply IOT technology to develop a web-based model for a sensor network that was wireless. They tested the use of cloud computing and IOT in combining education resource structures and introduced an integration model (Abdel-Basset et al., 2018:7). An integration model and the use of cloud computing can contribute significantly in this study to create an asynchronous model that can be used for PD. The significance for this study is that an online model for professional development of teachers will have to integrate a well-developed IT infrastructure that involves interfaces as well as hardware and software ingredients, which are the foundation of intelligent exchange of data. Using IOT for creating such a model must consider all the benefits and barriers teachers experience in the education domain.

An online model will have to state the programme design elements mentioned above, such as clear online learning goals and objectives to achieve, as well as have a variety of visual stimuli and real-world eLearning activities the teacher can apply in the classroom. Important in this online learning process is that there should be a feedback system with regular feedback to the teacher learners. Chin and Callaghan (2013:1) state that the IOT “is not just regarded as a community of network enabled devices, but rather it is seen as a layer of digital connectivity on top of existing infrastructure comprising networked things”. They explored the application of IOT technology to the

Intelligent Campus, a holistic model of ICT in education developing a network intensive model of linked devices and services; in this case to create a type of Living Lab, that forms the basis of teaching and research (Chin et al., 2013:2). The gains from this study will inform the model development for the current research project.

The relevance of the IOT to this study is that it allows the teacher participants to be linked anytime (any context), anyplace (anywhere), with anything (any device) and anyone (anybody) using any path (any network) and any service (any business) as shown in Figure 3.3: Internet of Things.

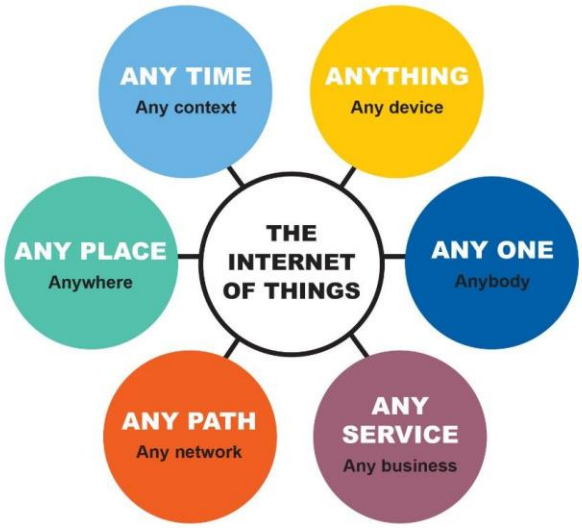

Figure. 3.4: Internet of Things (IOT) (Abdel-Basset et al.: 2018:4)

When utilising IOT in a smart education environment, six aspects need deliberation for its application as in Fig. 3.4. Firstly, *anyone: anybody* is shown in a general analysis of the teachers' challenges and requirements is the foundation for improving a personal learning environment. Secondly, *any service: any business* is a hybrid learning ecosystem that is created through integrating formal time and learning time which is formal with informal activities out of the classroom for adapted learning/working methods. Each organisation has its own culture and the same applies for each school. Therefore, smart learning situations rely on feedback, culture and personal responsibility. Thirdly, *anything: any device* is portrait in digital physical equipment which serves the purpose of effective collaboration between the facilitator

of the online professional development programme and the learner. Fourthly, *any path: any network* refers to the essence of the smart learning environment, which is the Smart IT, the intelligent infrastructure of IT. Fifthly, *any place anywhere* involves workplace architecture that influences the learning culture, e.g., a Google online classroom versus a physical classroom. Sixthly, *any time any context* entails the use of IOT in schools and learning centres helps to encourage smarter plans for lessons, increase access to information, keep track of important resources and the intelligent infrastructure of IT) (Abdel-Basset et al., 2018:9). In Fig. 3 the major areas where IOT is used, is shown in the smart education environment where customised learning takes place. This smart learning as depicted in Fig. 3.5 has a significant role to play in future education and in the design of an online model for professional development of early childhood teachers as planned by this study where the learning methods (pedagogy) adapt to incorporate digital equipment (technology).

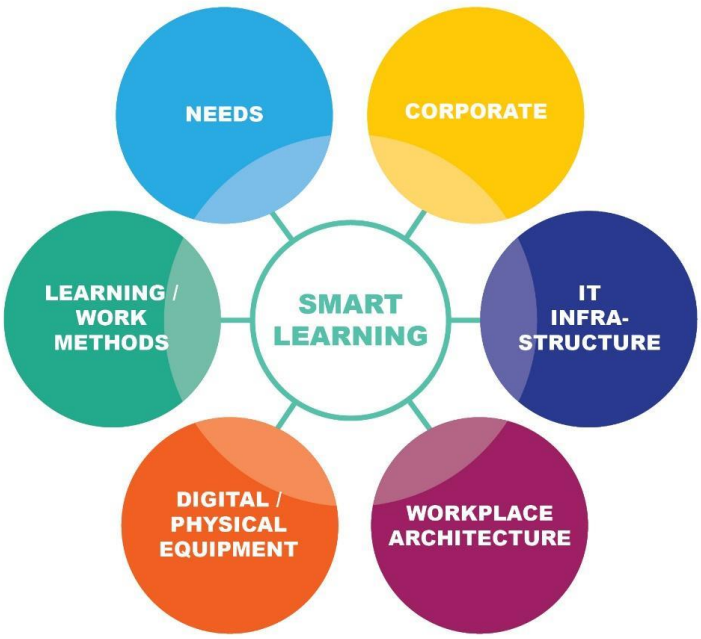

Figure. 3.5: The areas for utilising IOT in a smart education environment (Abdel-Basset et al., 2018:9)

The summative table below highlights the three main elements needed for a successful ECE online teacher professional model. Firstly, learning takes place between the teacher and the facilitation by the educator. Secondly, the digital

technology involved to make the online experience enjoyable and effective by creating platforms for the teacher to engage in online discussions with other teachers following the same online programme through chat rooms, discussion boards, WhatsApp groups, etc. Thirdly, the workplace is where the focus lies. The teacher needs to make connections and apply acquired knowledge to their own work environment.

Table 3.3: Summative section on the models/models above

MODEL/MODEL	LEARNING	DIGITAL	WORK
Technology-Enhanced Professional Learning (TEPL)	Learning processes	Digital technology	Work practices
Internet of Things (IoT)	Any Time (Any Context)	Any thing (Any device)	Any place (Anywhere)
	Anyone (Anybody)	Any path (Any network)	Any service (Any business)
Smart learning	Needs	IT Infrastructure	Corporate
	Learning work methods	Digital/physical equipment	Workplace architecture

3.6 THEORETICAL MODEL

3.6.1 Overview

The purpose of this study is to describe and understand the contextual realities and requirements of ECE teachers to propose a PD online model which will enable teachers to integrate and respond appropriately to their professional development. To pursue this purpose, the study needs to clarify theoretical perspectives on professional development and the role of digital technology in its offerings.

The theoretical model utilised in this study is an adapted and flipped ICT-CFT model. UNESCO's (UNESCO, 2011:10) ICT Competency Model for Teachers (ICT-CFT) is an international scale establishing the abilities required to teach efficiently with ICT. Horizontally, it is organised in three different methodologies representing three consecutive stages of a teacher's development: knowledge creation, knowledge acquisition through digital literacy and knowledge deepening. Vertically, it addresses six aspects of a teacher's work: curriculum and assessment, understanding ICT in education, pedagogy, organisation and administration, ICT and teacher professional learning (Mavroudi et al., 2018:3).

In this flipped version of the ICT-CFT model the teacher's professional development is the focus and therefore at the apex of the model. The three methodologies namely knowledge acquisition, knowledge deepening and knowledge creation follow to show the pedagogical use of ICT. These methodologies in turn focus on the teacher as researcher and lifelong learner using digital literacy in online interaction with other teachers. The teacher as networker collaborates in online environments. The teacher as innovator acquires new pedagogical knowledge to adapt to the changing education environment. To develop an OTPD model for an early childhood teacher, it is important to establish what the teachers' skills gaps and strengths are, what challenges these teachers may experience and the role adult learning theories play in this process.

According to UNESCO (2011:10), teachers' professional development is a lifelong learning process, rather than a once-in-a-lifetime event. The recommendation is that the ICT-CFT theoretical model be integrated into the three phases of teacher professional development with phase one being pre-service, which focuses on initial preparation of pedagogy, subject matter knowledge, management skills and the use of various teaching tools including digital tools and resources. The second phase, in-service, includes planned face-to-face and distance training opportunities building upon pre-service programmes and directly relevant to teaching challenges in classrooms and beyond. The third phase is on-going formal and informal pedagogical and technical support, enabled by ICTs, for teachers' advanced use of ICT to address everyday challenges and to enable students' learning. These three phases will be

explored in this study but with the focus being on the second phase, in-service professional development.

Figure 3.5 presents the theoretical model of this study, including all the variables discussed above as well as their interrelatedness, in line with the research questions examined in this study.

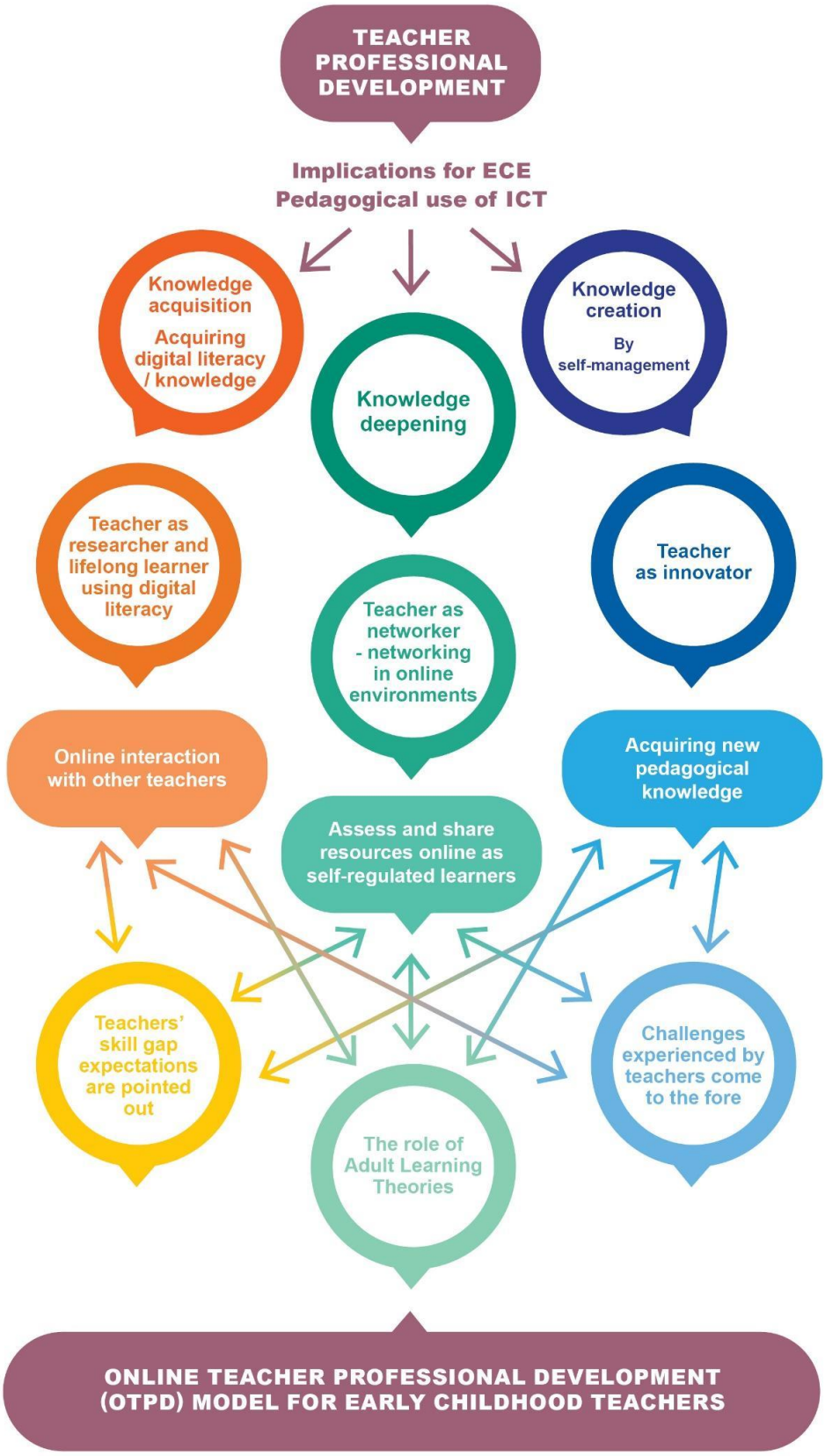

Figure. 3.6 The theoretical model of the study: ICT-CFT model

This theoretical model, ICT-CFT, correlates with the study because it provides a lens through which the OTPD model enhances teachers' experiences by looking at the following three major factors: teachers' skills gap, the role of adult learning theories and the challenges faced by teachers. These aspects will be briefly clarified below based on scholarly evidence, but broadened with the empirical evidence from the study.

3.6.2 Teachers' skills gap

Acquiring digital knowledge through PD shows that the teacher is a researcher and lifelong learner, while interacting online with other teachers. In this process the teachers' skills gaps are pointed out. According to Mavroudi et al. (2018:2), factors like subject knowledge, teaching experience and gender are strongly related with the beliefs and observations of teachers about the use of digital technology for educational purposes. A teacher that is experienced in teaching certain subject knowledge is not necessarily as capable using it with ICT. An online teacher professional development programme will necessitate that teacher to become more capable in the use of digital technology. In addition, while networking with other teachers in an online environment they share and assess resources online as self-regulated learners.

3.6.3 The role of adult learning theories

Adults are self-directing and have a desire to be seen as such. Learning appears to be the most effective when the learner has a sense of agency or control and a desire for learning. Adults have life experiences which may serve as reserves that can be called on when learning. This allows for the construction of new or altered knowledge. In calling on past experiences, learners need to be mindful of remaining open minded, calling on experiences that are useful and valid and eliminating biases that may hinder the construction of new or altered knowledge (teacher as innovator). Adults learn best when learning is relevant and they can see the immediate or future relevance, especially in the context of their societal roles (teacher as networker). Adults learn for now, with a real sense for better performance. Adult learning theories such as self-directed learning (see 3.1.6), constructivism (see 3.1.3), behaviourism (see 3.1.1), cognitivism (see 3.1.2), humanism (see 3.1.5) and andragogy (see 3.1.4) give

guidance in the process of developing an online professional programme for ECE teachers. Innovator knowledge creation takes place as the teacher acquires new pedagogical knowledge by self-management.

3.6.4 Challenges faced by teachers

During the process of developing an online professional development programme for ECE teachers several challenges that teachers experience come to the fore, such as distance, time constraints and affordability. In developing an online professional development programme, the following elements need to be considered. Lecturers should prioritise information and post videos of lectures in chunks. Requiring students to attend a live class online is not fair to the students who have challenges like time constraints, working and balancing family responsibilities. Providing recorded lectures will give more flexibility to students to manage their studies. Lecturers should prioritise key information, changing dates for exams and assignments and setting realistic expectations (Hoeffner-Shah, 2020:1).

According to Dunlap et al. (2018:83) there are several shared strategies online educators use to support students in online courses. These include providing individual and group feedback in an appropriate manner and grading frequently since an online programme needs to be an interactive experience and instructions for activities and assignments must be explicit and concrete. Students must be accountable for their learning and it is important not to assume all the students are technologically competent.

3.7 CONCEPTUAL LINKS TO THE LEARNING THEORIES

It is important to show the relationship between the conceptual links, teacher as researcher, teacher as innovator, teachers' skills gap, challenges experienced by teachers and the teacher as networker, in the Theoretical Model for this study, ICT-CFT and the adult learning theories discussed.

1. *Teacher as Researcher* is clearly shown in Cognitivism that states that learning is when a learner has an understanding of different elements of a larger problem that needs more intensive understanding through research.
2. *Teacher as Innovator* is portrayed in Behaviourism that focuses on the way teachers influence the way learners behave and this behaviour can be reinforced by adding rewards. Learners will work more dedicated to be rewarded.
3. *Teachers' skills gap* is incorporated with the aid of Constructivism; the skills gap that teachers might experience is addressed through knowledge creation. Learners should be inspired to create sense.
4. *Challenges experienced by teachers*. According to Andragogy the adult learner has an autonomous self-concept and can direct their own learning when experiencing learning challenges linked to shifting social roles and learn by internal rather than external influences.
5. *Teacher as Networker.* Constructivism underlines the fact that participants in this study will have the opportunity to network, share ideas and learn from each other's experiences through online interactions and chats during their professional development.

3.8 SUMMARY

In presenting a review of literature on the phenomena of teachers' continuous professional development, the challenges and benefits that influence the teachers' experience of their professional development, the skills they need and the expectations they have of this experience play a role that clarifies the meanings and interpretations of the key concepts used in this study. The development of a model for an online professional development programme of early childhood teachers' aims to make teaching and learning more accessible and gratifying for teachers.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 PURPOSE AND RESEARCH QUESTIONS

4.1.1 Introduction

This study was conducted in the context of practical realities of ECE in schools in times of digitalization. The purpose is to record and analyse professional development experiences of teachers in a selection of schools in order to propose a model for professional development that is relevant, appropriate and contributes to improving the status and continuous professional development of ECE teachers.

As will be considered and proposed in this chapter, the question of what is involved in a model of professional development requires a pragmatic and phenomenological design involving observations of teachers and interview/fieldwork notes. The interpretive paradigm is expected to enable a contextual understanding of teachers' experiences and beliefs.

4.1.2 Research questions

In the problem statement in Chapter 1, a case was made that a gap exists in the knowledge about the professional development of ECE teachers in the digital era. The following research questions guide the considerations of the research methodology:

Primary question

What are the features of a model for online professional development of ECE teachers in South Africa that can be relevant and appropriate to address the current challenges teachers experience?

Sub-questions

RQ 1:

What are the current and prevailing models of TPD and how are they informed by theories?

RQ 2: How do current online alternative TPD models vary regarding scope and relevance?

RQ 3: Based upon the review of literature and data gathered in schools, what should form part of an OTDP?

RQ 4: What are the practice implications as well as policy implications for the teacher roles of networker, researcher and innovator?

4.2 RESEARCH METHODS

4.2.1 Introduction

In this chapter, I explored the nuances of the research methodology, specifically addressing the intricacies of design, data generation and analytical methods. This comprehensive examination encompasses the delineation of meticulous sampling procedures, elucidation of methodological approaches and the presentation of frameworks that underpin the analytical endeavours. A primary objective of this study is to proffer a model for OTPD. The subsequent section, 4.3, further elucidates the methodologies employed in the development of this model.

4.2.2 Research paradigm

Researchers commence their investigative journey by establishing their foundational philosophical beliefs regarding the fundamental characteristics of reality (ontology), the means through which knowledge is acquired (epistemology) and the incorporation of their personal values (axiology) (Creswell et al., 2007).

As highlighted by Creswell (2007), the ontological issue revolves around the nature of reality and its essential characteristics. Within qualitative research, researchers adopt the perspective of acknowledging multiple realities (ibid). Throughout this study, I approached the study of participants with the explicit purpose of documenting and presenting their diverse and coexisting realities of professional development.

Creswell (2007) discusses the epistemological assumption that conducting a qualitative study entails researchers striving to establish close proximity to the participants under investigation. To achieve this in my study with early childhood teachers, I engaged in extensive fieldwork, spending considerable time in the teachers' learning environments, actively learning from their professional activities and engaging in in-depth interviews and focus group discussions. This immersive approach allowed me to gain a profound understanding of their experiences and perspectives, ultimately contributing to the development of a comprehensive and contextually relevant OTPD model.

The axiological dimension in research pertains to the values that a researcher introduces into their study. In the context of a qualitative study, researchers acknowledge the inherently value-laden nature of their work and make a conscious effort to transparently report their values, biases and the values inherent in the information gathered from the field. This process is often described as the researchers "positioning themselves" within the study (Creswell, 2007: 18). I addressed positioning and researcher bias during my research with ECE teachers, when visiting research sites and collecting data, by consistently maintaining reflexive field notes and engaging in peer debriefing sessions. These practices allowed me to regularly reflect on my personal values and potential biases, helping me to remain self-aware and minimize the impact of my subjectivity on the research process.

A paradigm or worldview is "a basic set of beliefs that guide action" (Guba, 1990, p. 17). This research was conducted in the interpretivist paradigm. According to Mertens (2015:78), this paradigm is about socially constructed human experiences. The researcher depended upon the views of the participants of the phenomenon being researched and recognised the effect on the research of their own ‘lived experience’ stories and background (Creswell, 2012). Tracy (2020) contends that reality and knowledge are not inherent but are instead constructed and perpetuated through processes of communication, interaction and practice.

The researcher drew on ECE teachers’ experiences and interpretations of professional development in order to understand and describe meaning to the phenomenon. It

allowed the researcher to view the participants' world through their perceptions informed by their 'lived experience stories' the "way they see fit without any distortions and/or prosecution" (Alase, 2017:9). Figure 2 clarifies how the paradigm will be used to understand what participants are saying and to make meaning thereof. Listening to the participating teachers' 'lived experiences', the researcher planned to bracket herself and not structure any preconceptions based on her own experiences. The researcher intended to find an understanding of the teacher participants' experiences of professional development by listening to and interpreting their side of the story. Important is that the researcher took great care not to become involved by adding her own story or ideas.

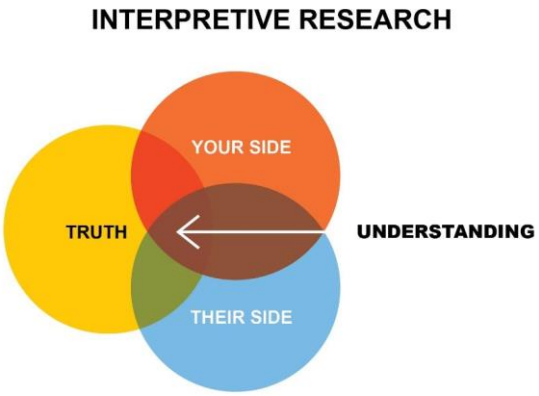

Figure. 4.1: Interpretive paradigm proposed for this study

4.2.3. Research approach

A definition of qualitative research provided by Denzin and Lincoln (2018: 3) is that "qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them." In Creswell's (2007) definition of qualitative research, the focus is on the process of research. The process initiates with underlying assumptions, a particular worldview, the potential application of a theoretical perspective and the exploration of

research issues that delve into how individuals or groups attribute significance to a social or human predicament (ibid).

The research approach for this study is qualitative research as this will present an in-depth understanding of the phenomena, teacher professional development and the scholarly evidence that will contribute to early childhood teachers' continuous professional development through the personal experiences of participants (Creswell, 2012). The researcher as a social being should show respect to the participants by allowing them to help set the rules of the research process and in doing so they are assisting the researcher to understand the consequences of breaching traditional ways of doing things (Tracy, 2010: 847). Qualitative research involves, inter alia, the use of interviews and observations. In qualitative research, the quality is not determined by the quantity of participants, but by how informed the participants are. Thus, the researcher intended to focus on a small cohort of ECE teachers in need of professional development to get an in-depth understanding of the challenges faced by the ECE teacher participants in professional development and to contribute to the elements of an OTPD.

Qualitative research presents certain limitations and at the same time unique fitness for purpose. On the one hand, it demands a significant commitment of time in the field, with researchers dedicating extensive hours to data collection and facing challenges in establishing access, rapport and attaining an "insider" perspective (Creswell, 2007: 206). The subsequent data analysis is a complex and time-consuming endeavour, requiring the arduous task of sifting through copious amounts of data to distil them into a few essential themes or categories, often carried out in solitude (Tracy, 2020). The writing process is protracted, necessitating lengthy passages to substantiate claims and provide multiple perspectives through the incorporation of participant quotes. Moreover, qualitative research lacks rigid guidelines, making it an evolving and ever-changing form of social and human science research, complicating both the planning and judgment of studies. Despite these challenges, qualitative research excels in delving deeply into human experiences and perspectives, offering a contextually rich understanding of the research subject and enabling nuanced exploration of complex social or human problems, making it an invaluable method for addressing such inquiries.

4.2.4 Research design

The research design can be portrayed as a rational plan to link the research questions with the findings of the research study (Yin, 2009:36). Creswell et al. (2007) discusses the fundamental aim of phenomenology as the process of condensing individuals' experiences with a particular phenomenon into a comprehensive depiction of its universal essence, akin to gaining a profound understanding of the inherent nature of that phenomenon. This study was conducted as a phenomenological study. According to Creswell (2012) a phenomenological study explains the significance for human beings of their lived experiences of a concept or a phenomenon. The focus is not on the life of an individual but rather on the phenomenon. The purpose is to, by means of a phenomenon, lessen these individual experiences to a description of the collective essence of the phenomenon. The researcher collected data from participants who experience the same phenomenon, in the case of this research, professional teacher development and developed a combined description of the substance of the understanding for all the participants. Fereday and Muir-Cochrane (2006:81) refer to Schutz's philosophical framework of social phenomenology which describes the ability of people to connect value to experience and observation. Within this framing, the researcher used the data collected and gave an interpretative thematic interpretation thereof. Tracy (2020:154) further substantiates that this is "to collaborate with participants to analyse their subjective experience."

4.2.3 Selection of participants

Given the purpose of this study, snowball sampling was considered and selected as the relevant method. The process involves the researcher approaching a small number of people within the target population who then refers the researcher to other possible participants within the same population (Parker & Scott, 2019: 2). Snowball sampling involves a selection of a target sample as a starting point followed by additional considerations of participant-involvement as advised by members in the sample. The benefits of this sampling method are that it is a process which draws on networking and referral until a point where data saturation is attained. Participants in the sample are asked to recommend other individuals they know who fit the research

criteria and might also be motivated to be participants (Parker et al., 2019: 3). Snowballing is a sampling technique often used in in-depth interviewing studies and is an efficient and effective way to gain access to participants appropriate for the study purpose (Geddes, Parker & Scott, 2018:6).

Snowball sampling was chosen as a method of selecting participants since it is relevant to working with accessible and hard-to-reach populations. For this purpose, ECE centres and preschools in Tshwane were deemed accessible and ten centres were approached by means of a visit during which the purpose of the research was explained and participation invited.

A total of 23 early childhood teachers were interviewed. Making use of the snowball technique the researcher relied on participants to inform others with similar needs for teacher professional development to become part of the study. The researcher contacted preschools in semi-urban areas to determine the challenges they experience in attending professional development programmes, how long they have been teaching, how many professional development programmes/workshops they have attended in the past and what their needs are, regarding professional development. The sampling criteria for the participants included: practising ECE teachers with a range of teaching experience; ECE teachers with some experience of professional development; ECE teachers willing to share views about challenges they experience in attending professional development programmes.

4.2.4 Procedure and data generation methods

Given the phenomenological design, the data generation process consisted of identifying participants, negotiating agreements with the participants, requesting them to sign consent forms in order to participate in this study and in in-depth one-on-one interviews with accompanying audio recordings. Methods of in-depth interviews, as an interpretivist method, following Showkat and Parveen (2017:4) involved one-on-one data collection for purposes of obtaining information which would allow for a deep understanding of a subject or concept. The strength of this approach is that in-depth interviewing is one of the most efficient methods of collecting primary data and that it

enables the discovery of in-depth details of the interviewee's experience and perspective on a phenomenon (Showkat et al., 2017:5). The data generation process is provided in Figure 4.1 and the methods are further clarified below.

Figure. 4.2: Data collection process

In depth interviews

Firstly, in-depth interviews using an interview schedule (see Appendix B) with pre-designed questions to identify areas that could be addressed in an online model for professional development including observations of ECE teachers. An in-depth interview is defined by Showkat and Parveen (2017:4) as a one-on-one data collection method of obtaining more thorough information or deep understanding of a subject or concept. This falls in the spectrum of the constructivist research model where knowledge is believed to have been created. Themes deducted from in-depth interviews assist the researcher in constructing more knowledge about the views of the participants on the phenomenon being researched, namely teacher's professional development and the participants' 'lived experiences' as stated by the interpretivist paradigm. In-depth interviewing is deemed a qualitative method of data collection.

The strength of this approach is that in-depth interviews are one of the most efficient methods of collecting primary data. Unlike a simple questionnaire or rating scale, in-depth interviewing is conducted with an intention of discovering in-depth details of the interviewee's experience and perspective on a phenomenon (Showkat et al., 2017:5). The difference is that in-depth interviews allow the participants to speak their mind which is not the case in a rating scale or questionnaire. The pitfalls of in-depth interviews are that they are often with a very small sample size, it is a time-consuming method as it is conducted on a one-on-one basis and it is also susceptible to prejudice (Showkat et al., 2017:9).

In-depth interviews were conducted in this study with the participants to gather data about teachers' experiences of professional development and to delve deeper into their knowledge of digital technology, content knowledge, subject knowledge beliefs, expectations, opportunities, challenges and resources. An interview schedule was compiled for the in-depth interviews that the researcher plans to conduct with participants where questions need to be answered to establish their experience of professional development. This dealt with the challenges, other than the lack of data and electricity, the fact that they often do not have access to institutions in the urban areas, they have families to take care of that prevent them from attending professional development programmes and how OTPD will help in this process. Questions to determine which adult learning theory or theories can be implemented with success for the ECE teachers in their circumstances were asked. Keeping these adult learning theory or theories in mind the researcher will focus on developing an online model to incorporate as a basis philosophy. Data from the in-depth interviews and what participants identified, for example their computer skills and the gaps and expectations they experience in their skills; the use of different digital programmes; the use of online tools to make their own teaching methods more interesting and which resources they can develop for their lessons were analysed as common themes.

Audio recordings were made during the interviews and listened to at a later stage to verify the validity of the data captured. It was important to involve participants in the development, execution and assessment of an online professional development programme by determining what they expect from professional development.

Qualitative Document Analysis

In addition to the interviews, the researcher made field notes to be analysed by means of Qualitative Document Analysis which involves, according to Wach and Ward (2013:1) a systematic analysis of the contents of written documents. In qualitative research, the utilization of field notes is widely advocated, with scholars such as Phillippi and Lauderdale (2018) highlighting their significance. Field notes serve as a vital component, not only enriching the dataset but also grounding qualitative studies in a broader societal and temporal context (ibid.). In this study, they offered valuable insights by capturing non-textual or auditory nuances during interviews and focus groups, thereby contributing to a deeper understanding of participant meaning. In addition, the process of document analysis of field notes played a crucial role in the crystallization of data, serving to corroborate and reinforce the evidence derived from interviews. By systematically examining and interpreting the written records of observations and reflections gathered during fieldwork, the study ensured a comprehensive and nuanced understanding of the researched phenomenon.

Focus group interviews

The third data collection method involved focus group interviews with participants to verify the data from the in-depth interviews and to get more clarity on specific matters such as their challenges, their specific skills gaps and expectations they have from professional development. A focus group interview as defined by Anderson (1990:241) is “a group comprised of individuals with certain characteristics who focus discussions on a given issue or topic.” Denscombe writes that “[f]ocus groups consist of a small group of people, usually between six and nine in number, who are brought together by a trained moderator (the researcher) to explore attitudes and perceptions, feelings and ideas about a topic” (2007:115).

In the context of focus group interviews, participants collaboratively build on each other's ideas and comments, contributing to a collective and in-depth exploration that surpasses the insights attainable through individual perspectives alone. The interactive nature of focus groups facilitates the emergence of unexpected comments

and novel perspectives, providing a dynamic platform for participants to share and elaborate on their viewpoints. This interactive dynamic, as emphasized by Nieuwenhuis (2007), enhances the overall value of the study by fostering a rich and multifaceted discussion, capturing a depth of understanding that may not be achievable through individual interviews. In addition, another strength of this approach was the rich and detailed data about the participants' own feelings and experiences which were collected in a short amount of time. Focus groups offered a possibility for instant feedback on participant's perspectives. It also allowed the researcher to explore the unforeseen qualities of the challenge under research (Dilshad & Latif, 2013:196). Although the pitfall of not being able to get the participants together in time for the focus group discussion is common, the researcher organised participation by arranging online sessions with the participants where required. In this study, the focus group interviews were conducted with the participants as required to get more clarity on specific matters such as their challenges, their specific skills gaps and expectations they have from professional development (see Appendix C). Audio recordings were made during the focus group interviews and thereafter transcribed for analysis.

4.2.5 Data analysis methods and planning

In keeping with the research design, the data analysis approach for this study is an Interpretative Phenomenological Analysis (IPA). This research analysis approach is deemed appropriate to the types of data collected, i.e. rich, detailed, first-person accounts of participants' 'lived experiences'. Through IPA the researcher has the best opportunity to understand the personal analysis of the 'lived experiences' of the participants. IPA is a qualitative research approach committed to examine how people make sense of their most important life experiences (Alase, 2017:9).

The IPA enabled the researcher to understand the 'lived experiences' of the participants and according to Alase, 2017:9 a qualitative research approach committed to examine how people make sense of their most important life experiences. IPA contains "significance-oriented methodologies, such as interviewing or participant observations, which rely on a personal relationship between the researcher and subjects" (Reeves and Hedberg, 2003:32).

IPA, by design, enabled the researcher to develop a bonding relationship with the participants and requires a high level of expertise from the interviewer, with “a combination of strong empathic engagement and highly attuned antennae ready to probe further important aspects” (Smith & Osborn, 2015:42). As an approach, it is participant-oriented where they express their ‘lived experiences’ without being judged or prosecuted (Alase, 2017). The Interpretative Phenomenological Analysis is associated with the interpretivist paradigm focusing on participants' own stories and experiences. In the data analysis process the interview transcripts were read by the researcher to identify the gist of what the teachers' subjective experiences had been. The researcher developed themes to tie the units of significance together into layered meanings to identify a deeper structure.

IPA contains “significance-oriented methodologies, such as interviewing or participants observations, which rely on a personal relationship between the researcher and subjects.” (Reeves & Hedberg, 2003:32). The ontology behind this study is that early childhood teachers lack training. Epistemologically stated in The National Audit of 19 971 ECE centres across the nine provinces of South Africa found that only 30% of practitioners had ECE certificates on any level and as many as 55% practitioners had no formal qualifications (PIECCE, 2018:19). The teachers’ ‘lived experiences’ are valuable for this research as it will give the researcher insight into the teachers’ preferences and will provide the teachers the opportunity to contribute to the planning, implementation and evaluation of CPD programmes offered and contribute to the development of an online model for teachers’ professional development. It is important for the researcher to make sure her own experience does not have an impact on any empirical results.

This data analysis approach is relevant because it will allow the researcher to get an in-depth understanding of the teachers’ needs, expectations, challenges and support systems as facilitated by the interpretivist paradigm since it links to the Interpretative Phenomenological Analysis, that needs to be put in place in an online professional development model as illustrated in Figure 6. This links with the interpretivist paradigm that studies the participants' own stories and experiences. Unfortunately, an approach like this lends itself to drawbacks when participants might not be totally honest about their own expectations and challenges out of fear of being marginalised. That is why

it is important that the researcher is always clear, transparent and open about her goal and role with this research.

Bracketing is a qualitative research tool used to alleviate the potentially harmful effects of prejudices from the researcher that may prejudice the research process (Weatherford & Maitra, 2019:91). Since the researcher is an educator and involved in ECE training, it is important for the researcher to bracket herself so that she remains unbiased. Moustakas (1994) supported 'bracketing' of the researcher's personal experience from that of the research participants' 'lived experiences'. According to Chan, Fung and Chien (2013) the researcher's own experience does not influence the participants' understanding of the phenomenon through the fundamental tool of 'bracketing'.

In the IPA approach, data collection leans heavily on the interviews with the participants regarding the phenomenon, professional teacher development and to get these interviews transcribed for data analysis. In the data analysis process the interview transcripts are read by the researcher to identify the gist of what the teachers' subjective experiences are. The researcher develops themes to tie the units of significance together into layered meanings to identify a deeper structure (see Figure 4.2 below).

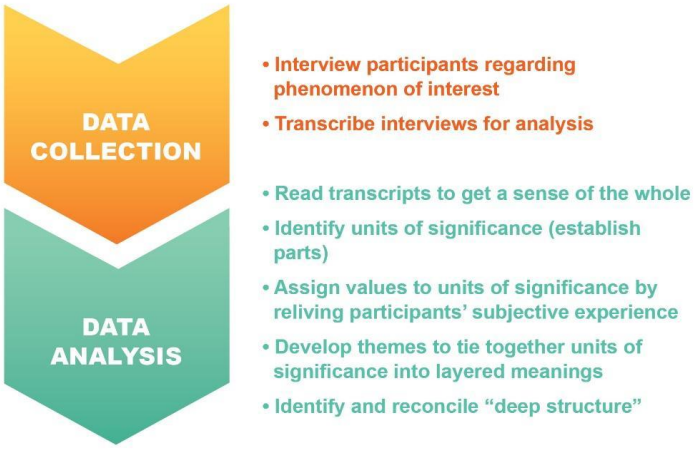

Figure. 4.3: The Interpretative Phenomenological Analysis (IPA) approach

4.3 MODEL DEVELOPMENT

Model development is a relevant consideration for this study since the purpose is to study teachers' needs, views and preferences for professional development in the context of changes in education, to formulate an OTPD model which can inform practice and policy decisions.

Studies of model development in education are mostly quantitative in nature (Creswell 2009). Several studies involving model development are found in the field of Nursing Education by Poggenpoel and Myburgh who advanced the understanding that model development methods are used for purposes of data and theory integration and representation (see Havenga, Poggenpoel and Myburgh, 2014). The work of Havenga et al., drawing on Chinn and Kramer (2015), follows certain set model development steps: concept analysis, relationship statements, description of the model and evaluation of the developed model. In their study, they illustrated model development applied to a real-life phenomenon and motivated their approach as "an inductive theory-generating research approach" (Havenga et al., 2014:149).

In this study the method of model development is planned to consist of concepts from literature and data. In this study the model development method followed the Havenga et al. (2014) procedure which involved a systematic analysis of key concepts and relations among concepts in the theory chapters, emerged with the visual presentations of themes in the data by means of AtlasTi and the construction of a visual metaphor representing an integration of findings. The model is represented in Figure 6.1 and is labelled as the Early Childhood Education Teacher Professional Development as Authentic Caring.

4.4 MEASURES OF TRUSTWORTHINESS

Trustworthiness is a quality criterion which involves the researcher convincing the reader that the findings of the research are important to note as it must be logically

tested according to certain measurements (Yin, 2009:40). Following Yin (2009:40) and Shenton (2004:64) trustworthiness is concerned with transferability, credibility, confirmability and dependability. It also involves checking for bias, precision, questioning procedures and discussions with peers (Yilmaz, 2013:320). In the following section the focus will be on the definition of these concepts concluding with a short discussion to explain how each will be achieved in the study.

Credibility is about becoming acquainted with the participants before the start of the project by making use of triangulation using a diversity of methods (Shenton, 2004:64), such as, the various data collection methods in this study which are all explained in detail in this chapter. Furthermore, Tracy (2020) discusses how qualitative research attains credibility through thick description, triangulation, the inclusion of multiple perspectives (multivocality) and acknowledging the researcher's partiality, as well as incorporating member reflections with study participants. In this study credibility was observed by using a triangulation of methods of multiple in-depth interviews, document analysis and focus group interviews. I incorporated member reflections into the focus group interviews by engaging with the participants, discussing analyses and conclusions, recording their reactions and subsequently integrating these responses and their insights into subsequent iterations of data analysis.

Transferability is about the extent to which the findings of this study have application possibility to other contexts (Henning, van Rensburg & Smit, 2004:149). According to these authors the research process can be replicated in a similar setting if it is well documented. Through making use of the data collected from the participant teachers during the in-depth interviews and focus group interviews, future researchers can get a similar group of teachers together to collect data on their experience of professional development and the need for an online model to streamline the teacher professional development process. The methodology of this study therefore aims to ensure that future researchers can replicate this research project in other areas to research similar phenomena.

Dependability, or consistency, regulates whether the findings of the study can be repeated and if the study is replicable. It further refers to the consistency of a researcher, research tool, or method over time (Tracy, 2020). Yilmaz (2013:320)

explains that dependability involves the careful selection, qualification and alignment of research strategies, procedures and methods, which are subsequently verified through an auditing process. In this study, I ensured that the research methods and instruments were reliable and align with and support each other.

Confirmability is the degree to which a study is based on the opinions and views of participants and not the biases or perspectives of the researcher. In this study the aim is that bracketing will be administered which means that the researcher refrains from judgment, bias and diminishing the effect of unacknowledged preconceptions related to the research (Weatherford et al., 2019:92). Within this study, the supervisor and participants jointly examined the comprehensive data descriptions to verify the accuracy and confirmability of the conclusions.

4.5 ETHICAL CONSIDERATIONS

In conducting this study, the researcher meticulously adhered to a comprehensive framework of ethical principles and guidelines, in accordance with the standards outlined by the University of South Africa (UNISA) and the Faculty of Education, as prescribed by procedural ethics. Procedural ethics, a branch of ethics, focuses on the mandated standards recognized by institutions as universal or necessary procedures, also known as categorical ethics, which delineate the common requirements applicable to all research projects. These ethical standards were faithfully upheld and integrated into the research process.

Critical aspects such as confidentiality and non-disclosure, securing voluntary informed consent and voluntary participation, recognizing the participants' right to withdraw from the study at any point and promoting openness and justice in interactions with research participants, who, in this case, were early childhood teachers who were upheld. Prior to commencing the research, the researcher obtained the requisite permissions from the principal(s) of the preschool(s) (see Appendix E) where the participating teachers worked. Permission was also sought from the Gauteng Department of Education to conduct the study (See Appendix F)

These steps not only ensured adherence to institutional protocols but also fostered transparency in the research process.

Furthermore, the participants were guaranteed the highest level of confidentiality and anonymity. They willingly provided their informed consent by signing a consent form (see Appendix D), in alignment with the UNISA ethics policy and procedure. The handling of these signed consent forms was executed with the utmost discretion, in line with the recommendations set forth by Henning et al. (2004:74). The participants were assured that any information they shared during the study would exclusively serve the purpose of the research and would not be utilized for any other purpose.

Additionally, the study placed significant emphasis on relational ethics, another crucial branch of ethics, which pertains to the researcher's relationships with the participants. It also encompasses the consideration of how the researcher's practices and representations might potentially affect the participants. This ethical framework ensured that the research process prioritized the well-being and rights of the participants, maintaining their confidentiality and anonymity, securing their voluntary and informed consent and representing their perspectives accurately. The commitment to these ethical principles, in alignment with the guidelines outlined by Tracy (2020), underscored the integrity, transparency and ethical rigour of the study. The researcher was dedicated to providing a clear and faithful representation of the participants' ideas and experiences, ensuring that their voices were accurately conveyed. It was of paramount importance to ensure that the study did not cause any harm or inconvenience to the participants, upholding their well-being throughout the research process. This commitment to ethics underscored the integrity and credibility of the study.

4.6 SUMMARY

The purpose of this chapter was to consider the methodological options and motivate choices made in the light of the research questions of this study. A qualitative phenomenological study within the framing of the interpretive paradigm was detailed

and the methods of data generation and analysis were explicated. In the next chapter, a brief activity report is offered on the ways in which data gathering transpired and then findings from the analyses and interpretations are offered. This integration is planned to inform the development of the OTPD model, which is the main purpose of the study.

CHAPTER 5

DATA ANALYSIS, FINDINGS AND INTERPRETATION

5.1 INTRODUCTION

The purpose of this study was to analyse current challenges reported in the continuous professional development of early childhood teachers in order to create a model which can be used for understanding and facilitating online teacher professional development. Doing so contributed to a theoretically informed, relevant, authentic, collaborative, caring and contextually responsive professional development model.

In this chapter a report is presented of how the research process transpired and the findings from the data analyses by sub-research questions. This is followed by a discussion in terms of literature and a synthesis/integration of the key findings/knowledge contribution in a visual representation.

5.2 THE RESEARCH PROCESS

The established processes stated in Chapter 1, paragraph 1.7 and Chapter 4, paragraph 4.4, were followed during the research phase of the study. In order to engage each participant from each preschool, facilitate participatory talks and acquire informed consent, I followed the prescribed ethical processes as reported in this paragraph. During the second half of 2022 and the first half of 2023, individual interviews with each participant and informal observations, as well as a focus group interview per preschool were done as part of the data generation phase. In total, 23 participants and four preschools in the Centurion area participated in the study. Focus group interviews lasted for two hours and individual interviews one hour.

Due to their keen awareness of the daily difficulties associated with teaching, participants were especially enthusiastic to engage. They were especially driven to look into ways to preserve alignment with parental expectations, take care of student needs and utilise technology. These topics have undoubtedly been discussed

informally and formally within the environment of the preschool and contributed to the responses in the interviews.

The creation of relationships became apparent when I participated in dialogues and reflections with the participants during their interviews, creating a favourable setting for in-depth discussions. The generated data was rich and covered a broad range of participant requirements, interests and objectives for professional development. From these interactions with participants, the researcher became aware of the range of needs for clarity on professional development processes available to them at school and the Departmental level.

Reflecting on the research process, it is clear that some changes from the original plan presented difficulties as well as insightful challenges. The primary goal of the sample criteria and plan, which were described in Chapter 1, paragraph 1.7.3.2 and Chapter 4, paragraph 4.2.2, was to include teachers with at least five years of experience. The idea was to benefit from their experienced viewpoints. However, as the study progressed, it was decided to include every member of staff at each preschool. This was as a result of the change towards inclusivity and the participants' diverse backgrounds, so that a wider range of perspectives was made available. This made it possible to explore the subjects under examination in greater detail.

Additionally, the initial plan stated that interviews would be conducted with ten individuals. However, the snowball sampling strategy included unexpected people in the study as the data collecting progressed along. Although unintentional, this extension served to capture new details and dimensions that deepened the research findings. It emphasized the fluidity of qualitative research, where flexibility in response to new insights can provide surprising and beneficial results.

Participant commitment throughout the duration of the data generation was noteworthy. Their participation indicated a sincere involvement in the study process

and provided authenticity and credibility to the insights gained. Likewise, the instruments used to generate data were crucial in highlighting important areas of interest. Notably, the sections of CTPD devoted to current opportunities stood out as being particularly significant.

The study being grounded in phenomenological design encouraged a deep engagement with actual lived experiences. Through this method, the deep layers of significance hidden inside the participants' stories and narratives were revealed. It underlined the ability of phenomenology to delve underneath the surface of insights and enable a thorough examination of the complex interplay between experiences, perceptions and difficulties.

5.3 DATA ANALYSIS METHODS AND BIOGRAPHICAL DATA

In Chapter 4 par 4.2.6 the methods of analyses were described. Interpretative Phenomenological Analysis was applied to provide a rich and detailed account of participants' experiences of CTPD through interviews with 23 participants. The preparation for data analyses included transcribing recordings and organizing data by type, namely: field notes of observations during site visits, reflection notes after school visits, individual and focus group interviews.

Content analyses were done by hand and included line by line coding following Charmaz (2011), Henning, van Rensburg and Smit (2004) as well as Creswell (2009). The first level of content analysis was done by the researcher by means of coding transcribed data with a view to identifying broad themes. This was followed by a second level of analysis by means of Atlas.ti. This method involved the use of software to construct codes in the data as well as the construction of visual representations and identifying linkages among categories.

Table 5.1 below provides the biographical data of participants from the four research sites. Data was collected in three centres from a total of 23 participants. It can be noted that all participants were female and between the ages of 24 to 64 years old. The participants' teaching experience varied and ranged from 1 to 40 years. Eleven teachers had no formal qualifications or those not in ECD while six had an NQF level 4 and two an NQF level 5 qualification. The remaining teachers had formal qualifications.

Table 5.1: Biographical data of participants per preschool

	Participant	**Age**	**Teaching experience**	**Qualifications**
Preschool 1				
	H	49	20	ECD NQF 4
	I	21	2	ECD NQF 4
	J	34	5	BEd Foundation Phase
	K	21	1	ECD NQF 5
	L	50	15	ECD NQF 4
	M	50	11	BEd Foundation Phase NQF 4
	N	42	12	ECD level 4
Preschool 2				
	F	64	40	Non-formal VVOS
	A	64	21	Gr 10
	B	52	12	Gr 12
	D	34	16	None
	G	32	15	NQF 4
	E	32	8	None
	C	24	3	HS ECD NQF 5
Preschool 3				
	O	60	6	None in ECD
	P	29	1	Level 4 ECD

	Q	30	7	BEd Intermediate Phase
	R	29	3	None in ECD
	S	61	5	None in ECD
Preschool 4				
	T	49	18	None in ECD
	U	24	4	BEd Foundation Phase
	V	49	8	None in ECD
	W	23	2.5	None in ECD

All four preschools that were selected are located in neighbourhoods and are well resourced. They have motivated, and dedicated staff and parents are mostly involved.

Preschool 1 is a family-run preschool that opened its doors in 1998. It serves the children from 1 year old to Grade R, with teachers and teaching assistants in each class to support. The school serves both Afrikaans as well as English speaking children.

Preschool 2, located in the East of Pretoria, is primarily an Afrikaans, Christian-oriented preschool that has been registered with the Department of Education since 1979 and complies with all the necessary inspections, requirements, and standards for preschools. There are three sections for the children, namely babies, toddlers and preschoolers.

Preschool 3 is a unique private Christian preschool that focuses on cultivating a love for learning through play activities that encourage children to develop emotionally, cognitively, physically, and spiritually. There are six classes ranging from 3 months to 5 years.

Preschool 4 is a preschool where a Christian foundation is laid, and basic concepts are developed like sharing, respect for all, and love for each other, where they care for the whole child, mind, body, and soul to ensure children reach their full potential. There are infants, toddlers and young children in the various classes.

5.4 FINDINGS FROM INTERVIEWS AND OBSERVATIONS

The content analyses enabled the researcher to identify 12 themes. As per the data analyses methods outlined in Chapter 4, par 4.2.6, the interview data was reviewed to comprehend the entirety of the content. Meaningful segments were recognized and participants' perceptions of professional development experiences were linked to corresponding values. Thereafter overarching themes to interconnect the significant segments, forming intricate layers of meaning were crafted by means of comparisons of codes and categories. The data generated are presented below per identified theme.

Theme one: Types of professional development programmes/ workshops attended

Participants indicated previous professional development programmes or workshops they attended.

- Participants [A] [B] [C] [D] [E] [F] [G] attended AECYC (Association for the Education and Care of Young Children) morning programmes at UNISA on different topics, three times per year.
- Participant [G] is still busy with the level 5 ECD programme.
- Participant [C] studied a few programmes through OASIS (Online Affiliated School Information System), as well as programmes through EduExperts (accredited online training qualifications for preschool and primary schools.
- Participant [E] did a programme through SA Childcare.
- Participants [R] [T] [U] [V] [W] attended short programmes at Koeitjies and Kalfies nursery school.
- Participant [W] completed a BEd degree in Foundation Phase through Aros, although this is a formal qualification and not a professional development programme.

Theme two: Benefits of attending face-to-face programmes/workshops

The benefits indicated by the participants of attending face-to-face programmes or workshops were summarised in the table below:

Table 5.2. Benefits of attending face-to face programmes

Participant	Benefits listed
F	Prefer attending face-to-face programmes loves the interaction with people. You get a lot of ideas and different points of view from the other teachers.
C	Prefer attending face-to-face programmes. I need to see what the presenter shows and to hear what he/she says.
D	Prefer face-to-face as I feel I can easily ask questions there, but only if they have smaller breakaway groups.
E	In face-to-face programmes, you can really see what is going on. I think face-to-face is better, but I prefer smaller groups. I do not like big groups.
H	It is nice if the school organises a programme for all the teachers teaching at the school to attend at the school. They can then all talk together and share their ideas.
I	In a face-to-face programme, they can show you how to do certain things for example how to set up a weekly planner.
J	I prefer to attend face-to-face programmes. I feel you can ask questions more easily if it is not a big group. You can get more insight in others' ideas.
O	I would prefer to attend face-to-face programmes as I would be able to communicate much better with the other teachers.

T	I prefer to face-to-face programmes as I feel I will be able to take more in of what the programme is about. I must say I haven't had the opportunity to attend an online programme yet, so it is difficult make a comparison between the two types of programmes.
V	I prefer to attend in-person where we can sit in the classroom.
W	My studies for my BEd Foundation phase were partly online but I prefer face-to-face where I felt I could ask questions in-person when I couldn't understand something. Online we had WhatsApp groups where we supported each other.

Theme three: Challenges attending face-to-face programmes/workshops

During the interviews participants raised challenges they experienced during their attendance of face-to-face programmes and workshops:

Table 5.3. Challenges of face-to-face professional development programmes

Participant	Challenges experienced during programmes and workshops
F	In big groups it can be difficult to ask questions. It is better when there are breakaway groups. Then it is easier to share your ideas and get new ideas from the other teachers.
A	If the group is too big, I get easily distracted.
A	I'm not comfortable to ask questions in a big group.
B	Time is a big challenge to make it possible to attend face-to-face programmes.
C	Some teachers do not have the finances to attend face-to-face programmes. Online programmes are cheaper.
C	I must say I won't be able to ask questions in a big face-to-face programme. It may be possible to ask questions in smaller breakaway groups.

D	Time is a challenge for teachers to be able to attend face-to-face programmes.
E	It is often too far for the teachers to travel to the face-to-face programmes.
H	Transport is also a problem for some teachers to attend face-to-face programmes.
J	Teachers often do not have transport.
J	Teachers with small children find it difficult to attend the face-to-face programmes.
J	Cost is also a challenge as school often cannot pay for their staff to attend the face-to-face programmes.
N	It takes time to attend face-to-face programmes and the teachers normally work long hours.
Q	When you have your own family, it is difficult to attend face-to-face programmes on weekends.
R	Transport will be a problem for some of the teachers. You have to organise for someone to take care of your children while you attend the in-person programme.
R	If the group is too big it is difficult to follow what is happening and to participate in the discussions and ask questions.
V	It might be difficult to get time off from school to attend face-to-face programmes.
V	If the programme is offered some distance away it might be a problem for teacher who doesn't have their own transport and they have to make use of Uber that will cost them a lot of money.
W	**Transport** is a problem for me to be able to go in person to a development programme, also the **cost** thereof.

Theme four: Knowledge of CPD (Continuous Professional Development) points

During the interviews, participants were asked if they are aware of CPD and the accumulation of CDP points. Their answers are listed below:

Table 5.4. Knowledge of Continuous Professional Development

Participant	Awareness of CDP responses
F	I heard of it but has no real knowledge about it.
G	Yes, I know about CPD points through SACE, but not for preschool,
A	I have no knowledge of CPD points.
C	I've heard about it but has no further knowledge about it.
E	I've heard about it, but do not know much about it.
I	It sounds familiar, but I do not know much more about it.
J	Yes, I learned about it when I was teaching in the primary school.
K	I've never heard about it.
L	I have no knowledge of CPD points. What is it?
M	I know that SACE has courses and then you get points when attending their courses, but I only heard about it in the primary school.
R	No, I've never heard about it.
S	I don't have knowledge of these CPD points.
T	I have no knowledge of the CPD points.
V	I haven't heard about CPD points for teachers before.
W	I heard something about it but never really investigated it more.

Theme five: Recommendations for professional development programmes

Participants were asked about gaps they experienced in the CPD offerings and if they have needs that were not addressed by programmes they attended. Their responses are noted below:

Table 5.5 Gaps identified in Continuous Professional Development

Participant	Identified gaps and needs
G	I find there isn't enough challenges and knowledge to make **Art** more creative in the classroom for the children. It will have a positive impact then on maths, fine motor development and gross motor development.

	I feel a programme to show how to be more creative will be beneficial. It should be more about the process and not the product in the end.
D	I would like to know more about how to handle children with **tantrum behaviour**.
E	I would like to do programmes in teaching **Art** and **Maths**.
H	I would like to know more about how to attend to a child with **Down syndrome** in the classroom. I would like to get more information on children with **special needs**.
I	Development programmes on discipline that is more focussed on how to attend to **certain difficult situations** in your classroom where the children behave out of the normal. Also, how to handle a child with **Down syndrome**.
J	I would like to know more about **Psychology** and **Art**. I would like to know more why children react in certain ways.
I	It would help if the presenters **created scenarios** and divide the teachers into groups. The groups then get each a different scenario to discuss. The facilitator/lecturer can then facilitate them and give advice on how to handle the different scenarios.
K	I would like to know more about children with **special needs**, how to handle them, especially children with **Autism** and **Down syndrome**.
N	I would like to attend programmes on **sensory stimulation** for young children.
N	I would also like to know more about how to attend to children with **Autism** and **Down syndrome**.
O	I would like to know more how to handle children **from different age groups** in one classroom. How to keep the younger children busy while working/teaching the older group of children.
Q	I would like to learn more about **Psychology** to help and support the children in the class.
R	I would like to learn more about how to **handle the discipline** with young children, because you can not do anything with children nowadays. The children know that so well!

R	How to make more and better **use of music** in my activities will be a big plus point for me. I realised that the young children like music.
S	Development programmes that focus more on the **practical** aspects in the classrooms, how to implement certain aspects with the young children in the classroom.
T	I would like to know more about **babies** and **their milestones**, **activities** to do with them.
U	I would like to know more about children with **special needs** such as children with ADHD. I can not diagnose the children, but I can see if they really need a different style of attention. With a bit more knowledge I can help identify and work with these children.
V	I would like to know more about the group of children in my class, the two to three year olds. I don't know them and I would like to know how to work with them and get ideas of activities I could do with them. They cannot tell me what they want and what they need.

Theme six: Content of programmes attended

Participants were asked during the interviews regarding the content of programmes that they had attended and what had been presented to them. They mentioned the following:

Table 5.6. Content of Continuous Professional Development programmes

Participant	**Content**
F	I attended an interesting **music presentation** where a whole spectrum was covered. I applied it immediately in my classroom. We were also challenged by the principal to compete against each other for the most interesting music presentation. It was a lot of fun.
A	I attended a programme about how to promote **stimulation in the classroom**. Also about **routine** and how to implement it in your classroom.

B	We attended a programme form AECYC at UNISA where they focussed on music. It was very interesting and I could apply it in my classroom.
H	I attended a **sensory stimulation** programme as well as a **cognitive** programme.
L	I attended a programme about the use of **themes** in the classroom and also on how your **class should look like**.
U	I attended a course where we were shown how to use **recyclables** in the classroom instead of expensive equipment. You don't have to buy expensive things for the class. Other programmes I attended showed how to work with the parents; how to greet the children in the mornings. (**ELDAs programmes**).
U	How to use music in every aspect of the **classroom routine**.
W	I would like to know more about children that is Autistic. I suspect one of the children in my class is autistic I would like to know how to stimulate a child like that.

Theme seven: Challenges of online programmes

Participants were asked about the challenges they experienced with online programmes. The answers received are directly below:

Table 5.7 Challenges of online professional development programmes

Participant	**Challenges experienced**
F	You need internet to attend online programmes.
F	People often do not feel comfortable to ask questions in online programmes.
E	It is not the same when you sit in front of your screen as what it is like when you attend the programme face-to-face.
H	What could make it difficult to attend online programmes is the availability of internet and Wi-Fi. Loadshedding is also a challenge with online attendance.

H	If a person just sits and plays on their phone the whole time they are watching the online programme they do not benefit at all from the programme.
I	Often people don't have **Wi-Fi** and **data** and some do not have **computers**.
K	**Internet** is a challenge, **costs** can be a challenge**, time to attend** is a challenge. Some people **do not feel comfortable** in the online programme.
L	Some teachers do not know how to **work with a computer**, I found it difficult at first to work online with the computer. Luckily my husband could help me with that. Now it is much easier for me.
M	I have attention deficit disorder (ADD) which means that I have poor working memory. I need programmes that are more visual. Online is therefore a challenge as you must force yourself to concentrate more as online programmes are more focuses on the auditory and not the visual. If online programmes play more emphasis on the visual aspect that could work well.
Q	It can happen that when you attend an online programme you don't really get experiences as it happens in real life situations. Often the knowledge you gain doesn't help you deal with specific situations in the classroom.
R	The only challenge I see with online programmes is when you don't have a **computer**, but this can be solved if the school has a computer and everybody watches together at the school.
S	Online programmes will give you the knowledge of what to do but the challenge is to apply it in the classroom, so it depends on how it is done practically.
S	Some teachers do not own laptops, they do not have the necessary technology and data to do online programmes. It is not always safe to have technology on the school premises as it gets stolen. If it is locked away the teachers do not use it.
T	I think it could be difficult **to ask questions** in an online programme. You can be more confused if your questions can not be answered.

U	In an online programme, you don't really ask questions. You just sit and listen.
V	Some teachers could switch on their television but carry on doing their own thing. They pretend to be there and listen to the programme.
V	When there is no data available, problems with the network it will be difficult to attend an online programme.
W	You need a lot of determination to sit on your own and do an online programme.

Theme eight: Benefits of online programmes

Participants mentioned the following benefits they experienced from online programmes attended:

Table 5.8 Benefits of online professional development programmes

Participant	Benefits of online programmes
F	If there are breakaway groups in the online programme teachers will be able to **ask questions**, they normally won't ask in the big groups.
F	It keeps your brain going and challenges you to try **new and exciting things** in your class.
G	I prefer online programmes. It can be very personal. There is not always the time to attend face-to-face programmes and then you can do the online programme in your **own time**.
G	Another benefit for online programmes is that you can always go back and look and **listen to the recording again** to sharpen yourself.
G	Their **house routine** often prevents teachers from attending face-to-face programmes then they can still attend programmes by watching it online.
A	While you watch the online programme you can **take notes and make summaries** of what is said without the disturbance of other people around you.

A	I also feel I can **concentrate more** in an online programme. There are no other people to distract you. In front of your computer there will be no distractions.
A	I can also watch the online programme in my **own time**.
A	I can also **show** teachers what I do in my class. Maybe take videos and show it to them online.
B	I feel much more **at ease** in an online programme.
B	I can **concentrate more** while I'm watching an online programme.
B	I can go back and listen again to an online programme. You can even pause it, go and make coffee and come back and continue listening.
B	In an online programme you don't have to sit through the whole programme at once, you can break it up in parts and watch it over a couple of days.
C	There are teachers at our school who don't have their own transport. For them it is better to attend online programmes as they then need not travel far.
C	Some of the teachers at our school also do not have internet. It is then easier for them if they can watch an online programme at the school.
C	Long hours at the school will allow teachers to watch an online programme on weekends as well.
C	It is possible to ask questions online and it will then be answered directly or in the chat option.
D	As a group of teachers, we can sit together and watch the online programme and discuss it afterwards.
D	A benefit of online programmes is that there can be programmes that focus on specific aspects such as children's tantrums that is not the concern of all the teachers. Only those teachers experiencing this challenge can then attend the programme.
D	It is nice when I attend an online programme and we are asked to discuss how to for example make the sandpit area more interesting.
E	It is often too far to attend face-to-face programmes then teachers can attend an online programme at home.

H	I attended a few online programmes and really enjoyed it. I could listen intently and at the same time look at the notes provided.
H	What I liked about the online programme I attended is the exam that we wrote after the programme was completed. For this we had to score a minimum of 75% in order to pass the programme successfully.
H	Attending any programme empowers yourself and enhances your self-esteem.
I	Online programmes are very flexible. You can watch it at any point in time and at any location with Wi-Fi or data available.
J	You can watch the online programme when you have time and need not feel stressed about it. You can also go back and watch it again. It is often difficult to go to a venue to attend face-to-face programmes.
J	Depending on teachers' personalities some will be more involved in the programme if they do not attend in person but rather online, especially those teachers who are very shy.
K	I am comfortable attending online programmes. I'm used to doing it. I'm busy with my BEd Foundation phase degree online. It is like face-to-face studies where you can ask questions.
K	Online programmes can be done in the comfort of your own home. Teachers with children of their own will be able to attend them.
L	You can work in the comfort of your own comfort zone. You don't have to challenge the traffic and with load shedding there is always the stress that you won't be on time for the programme.
L	In the online programmes we are usually a group of teachers that support and encourage each other.
M	You can do online programmes from the comfort of your home. You don't have to use any of the study time to travel.
M	You save costs as it is cheaper to do online rather than face-to-face programmes. Face-to-face programmes are often twice as much as a similar online programme.
N	I prefer online programmes as I have three children of my own to take care of.

N	You can do the programme in your own time. For me the choice of doing online programmes is a very comfortable choice.
N	Online programmes are not as expensive as when you must attend programmes in person.
O	I communicate with a preschool teacher from New Zealand as we have children in our classes from the same age group. I learn a lot from these online interactions.
P	I prefer online programmes as I have a four-year-old daughter and my husband often must go away for his work. I then need to be at home with our daughter.
P	All the practical exercises from the online programme I can do at the school where I teach.
P	For teachers in-service training is better online and they can then do the practical exercises in their school.
P	Online programmes are not as expensive as face-to-face programmes.
P	I like doing the online programmes in my own time at home.
Q	I did a few programmes online such as TEFAL and UNISA. What is nice is when you must send in videos. These videos are aimed at very specific topics such as planning an activity for the classroom eg. Summer.
Q	If you are hard-working and self-motivating online programmes are beneficial as you do it on your own when you have time.
R	I think it is much easier. If you don't have transport everybody can get together at the school where you go every day in any case. Rather than everybody having to organise transport to attend a programme in person. Everybody can even watch on one computer at the school.
R	If you are online and you have everything at home, you can do it from home in your own time.
R	If you do the online programmes together as a group of teachers you can have the opinions of the other teachers. In this case it becomes more practical to attend the online programme.

R	You can sit in your bed with your pj's on a cold day and fully participate in the online programme.
S	On WhatsApp groups with the parents videos are sent for the parents to get some practical ideas what to do with their little ones at home during holidays and when they are away or even when they do not feel too well.
T	It is more comfortable to be able to do it in your own room, own study.
U	Many of the online programmes are free. You can do it in your own time.
U	I would like to learn as much as I can. One is never too old to learn and I feel you never know enough.
V	You can do the online programme in the comfort of your own home.
W	You could do it in your own time and in your own home.

Theme nine: Assessments in online programmes

Participants shared the way in which they were assessed during the online programmes they attended.

Table 5.9 Types of assessment in online professional development programmes

Participant	**Mode of assessment**
G	At the end of the online programme, we had to hand in a **portfolio** containing all the exercises and examples of activities we worked on.
B	We filled in a **questionnaire** at the end of the online programme. That was to make sure we paid attention throughout the programme.
C	At the end of the online programme, we completed a **quiz** on the matters that were addressed in the programme.
E	We filled in a **questionnaire** at the end of the programme.
H	We had to write **tests** on the content of the online programme.
R	The best way to assess is to have the teachers write a **test** to see what they gained from the online programme.
T	No assessment done in the programmes thus far.

V	I think assessing during and after the programme is important. It helps us to see where we can do better and in a different manner. Therefore it is necessary to assess the programme.
W	I think it is important to do some form of assessment after a programme even if it is just a checklist to see if you are up to the standard of the programme.

Theme ten: Working with teachers from other preschools

Participants shared their thoughts on collaboration with teachers from other preschools.

Table 5.10. Teacher as collaborator

Participant	Collaboration with other preschools
B	I think to work with other preschool teachers is a good idea as we can exchange ideas and information. You can learn more about how to handle your specific age group of children in your class.
C	It is beneficial to work with other preschool teachers as you can find out about similar situations as those your experience from them. You can also share difficulties in your classroom with others.
H	I would like to work with teachers from other schools.
N	I think it will be very interesting to communicate with other teachers and get new ideas and hear about their experiences in the classroom.
P	There is a group of preschool teachers on Facebook and there you can get nice ideas and tips that are very helpful and interesting.
Q	When you talk with teachers from other preschools you can see and hear what their experiences, concerns and difficulties in the classroom are.
T	It is definitely beneficial to work with teachers from other schools. They can share their ideas with us and we can give each other advice.
U	I only talk and discuss with teachers in our own school, not really anyone from the outside. It can be very beneficial.

V	I would like to work with teachers from other schools. Not everyone does things in the same manner. We can learn a lot from each other.
W	It is beneficial to work together with other teachers. You learn something you did not know and hear something interesting you can use in your own class.

Theme eleven: Examples of activities shared and demonstrated in online programmes

A few participants elaborated on practical examples shared with them and demonstrated to them during the programmes:

Table 5.11 Example activities in online professional development programmes

Participant	Activities shared and demonstrated
B	We did a very nice music activity that I applied in my classroom afterwards.
C	The outside area and how to make it more accessible and entertaining for the children.
D	What a classroom should look like.
D	How to make the sandpit area more interesting for the children.
H	Exercises on how to do cognitive development and fine motor development with the children.

Theme twelve: Skills needed by teachers in order to be able to attend online programmes

Some participants shared skills they think are necessary for teachers to have that will enable them to join in online programmes:

Table 5.12 Teacher skills required for online learning

Participants	Skills necessary to participate in online learning
R	Teachers need to be computer literate or have someone to help and support with this.
T	Teachers should be able to use a computer.
V	You must want to be in the online programme. If you don't really focus and are not motivated then you shouldn't be there.
V	You also need Wi-Fi or data to be able to complete.
W	You need to have internet and a computer. I had to borrow one from work for my studies. You also need to be computer literate.

The outline of themes above is intended to group participant responses into themes which covered the full set of data. This is now followed by the next level of analysis by means of AtlasTi and the purpose is to specify codes and categories in detail in order to also explore the data links and associations in the data.

5.5 SECOND LEVEL OF DATA ANALYSIS

5.5.1 Introduction

For the purpose of model development, AtlasTi was used to describe how the main categories in the data were derived and how online and face to face professional development programmes correlate. These analyses focused on the data across data types relevant to the views shared by all participants on a) teachers, b) experiences of face to face CPD programmes and c) experiences of online programmes. The presentation of the secondary data analysis will be provided in visual network charts for each analysis and a discussion thereof forms part of the data interpretation.

The software AtlasTi is an electronic programme which works with transcribed data such as interviews, field notes and assists the researcher with second and third levels of analyses looking at ways in which categories are associated with others (Claasen, 2019:15).

For this study, the full sets of transcriptions of all interviews were uploaded into the programme which allocated codes to meaning units in the data, reviewed and sorted what was processed. The codes identified were then sorted into categories and sub-categories. Based on this, the software developed a hierarchical structure to show links within and between the codes and categories. According to the AtlasTi user manual (Claasen, 2019), the programme makes use of word and phrase repetitions in the transcriptions, makes primary and secondary comparisons and produces network charts indicating relations and associations.

5.5.2 Network analysis of codes and categories *Teacher*

The broad categories of codes in Figure 5.1 (see also Table i in Appendix H). are Demographics (TID), Working with teachers (TIW), Knowledge of CPD (TIK), Recommendations for development programmes (TIR), Programmes attended, (TIP) and Benefits of programmes (TIB).

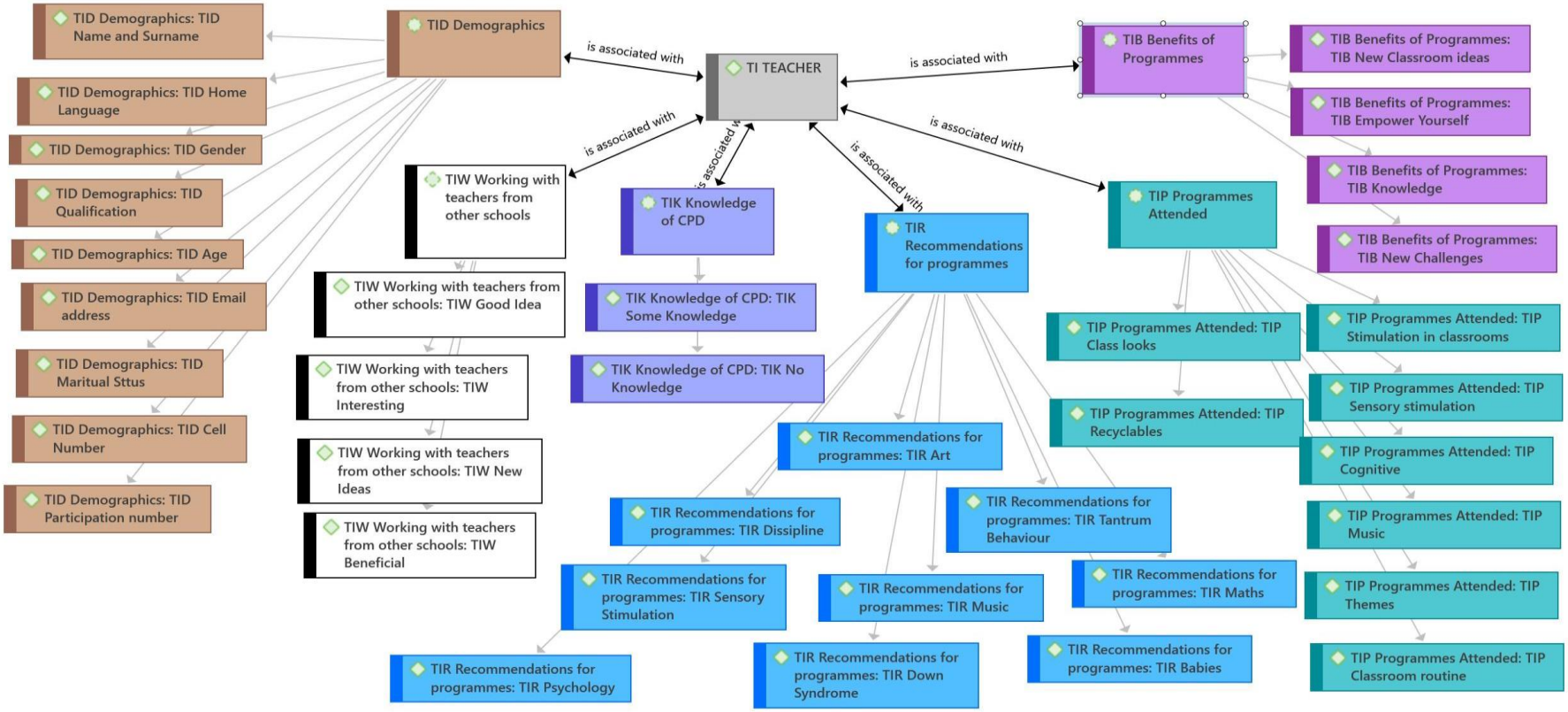

Figure 5.1 Network diagram of codes and categories *Teacher*

The above figure, Figure 5.1 shows codes making up the biographic information as well as five broad categories of content in the data. In the case of each category specific codes are linked with arrows. The different categories have a varied number of content codes associated with them: The category TIW Working with teachers from other schools, 4 codes, TIR Recommendations for programmes, 9 codes, TIP Programmes attended, 8 codes and TIB Benefits of Programmes, 4 codes.

5.5.3 Network analysis of codes and categories *Face to Face Programmes*

The broad categories of codes on Face to Face Programmes are: FTFB Benefits, FTC Challenges. These are noted in Figure 5.2. and also presented in Table ii in Appendix H.

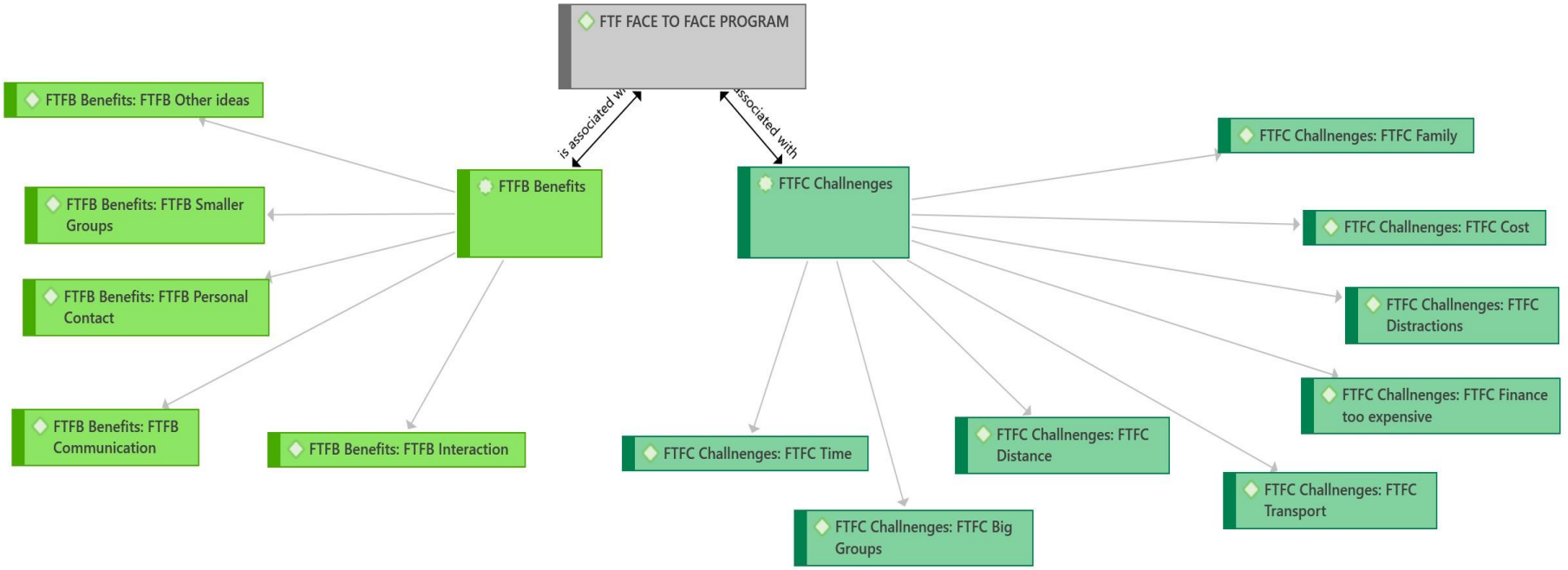

Figure 5.2 Network diagram on Face to Face Programmes

The network diagram presents the codes in the data linked to two categories FTFB Benefits and FTFC Challenges, 5 codes and 8 codes respectively. The codes represent the range of understanding participants shared in response to questions about benefits of face to face programmes and the extent to which they described challenges with such programmes.

5.5.4 Network analysis of codes and categories *Online Programmes*

The broad categories within Online Programmes are OPSA shared Associates, OP Benefits, OPC Challenges, OPA Assessment Types and OPS Skills development are presented in Figure 5.3 below. The codes and categories are also presented in Table iii under Appendix H.

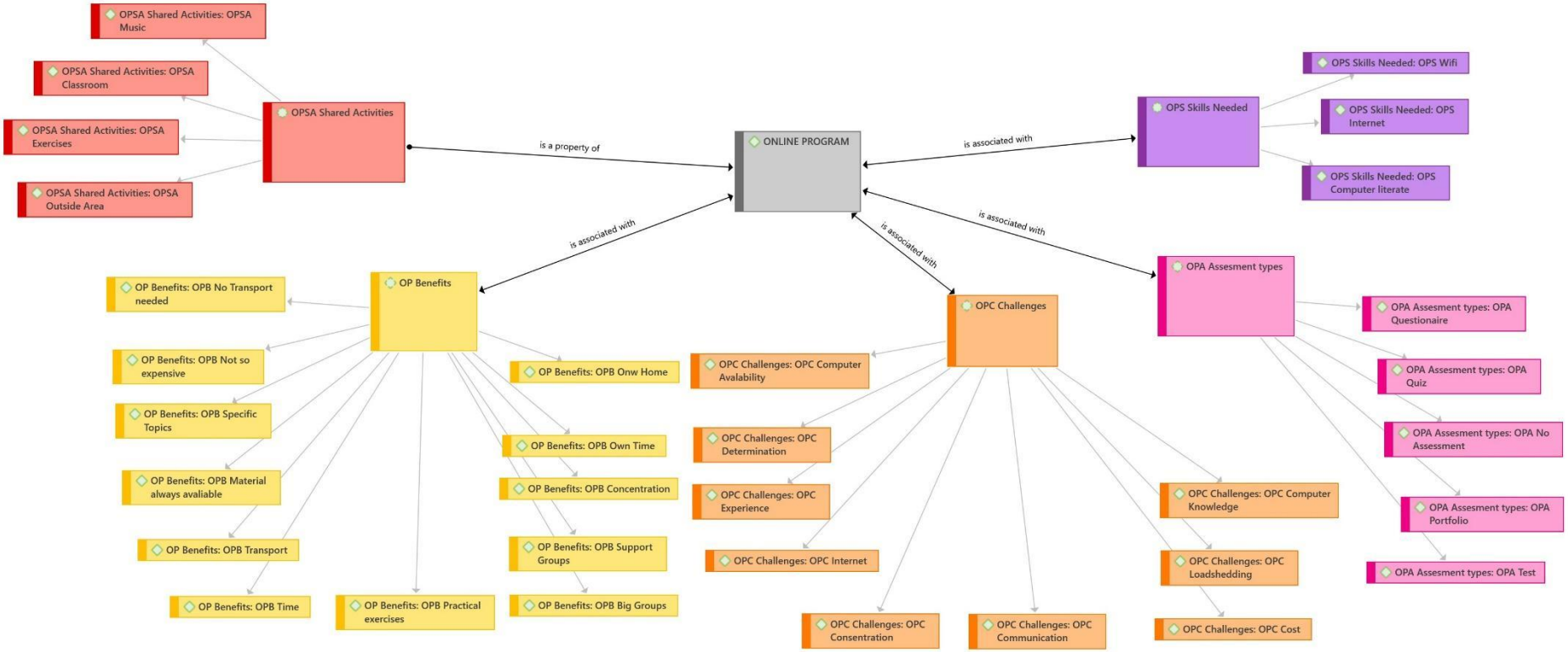

Figure 5.3 Network diagram on Online Programmes

The Network diagram shows 5 categories of codes on questions about online programme: OPSA Shared activities, OP Benefits, OPC Challenges, OPA assessment types and OPS Skills needed. The codes make up the content in the case of each category and will be reviewed in the discussion section.

5.5.5 Comparison of network analyses face to face and online programmes

Figure 5.4 presents the findings from the network analysis which compared the previous two charts: Face to face – made up of FTFC Challenges and Challenges transport. And the Online – OP Benefits and OPB no transport.

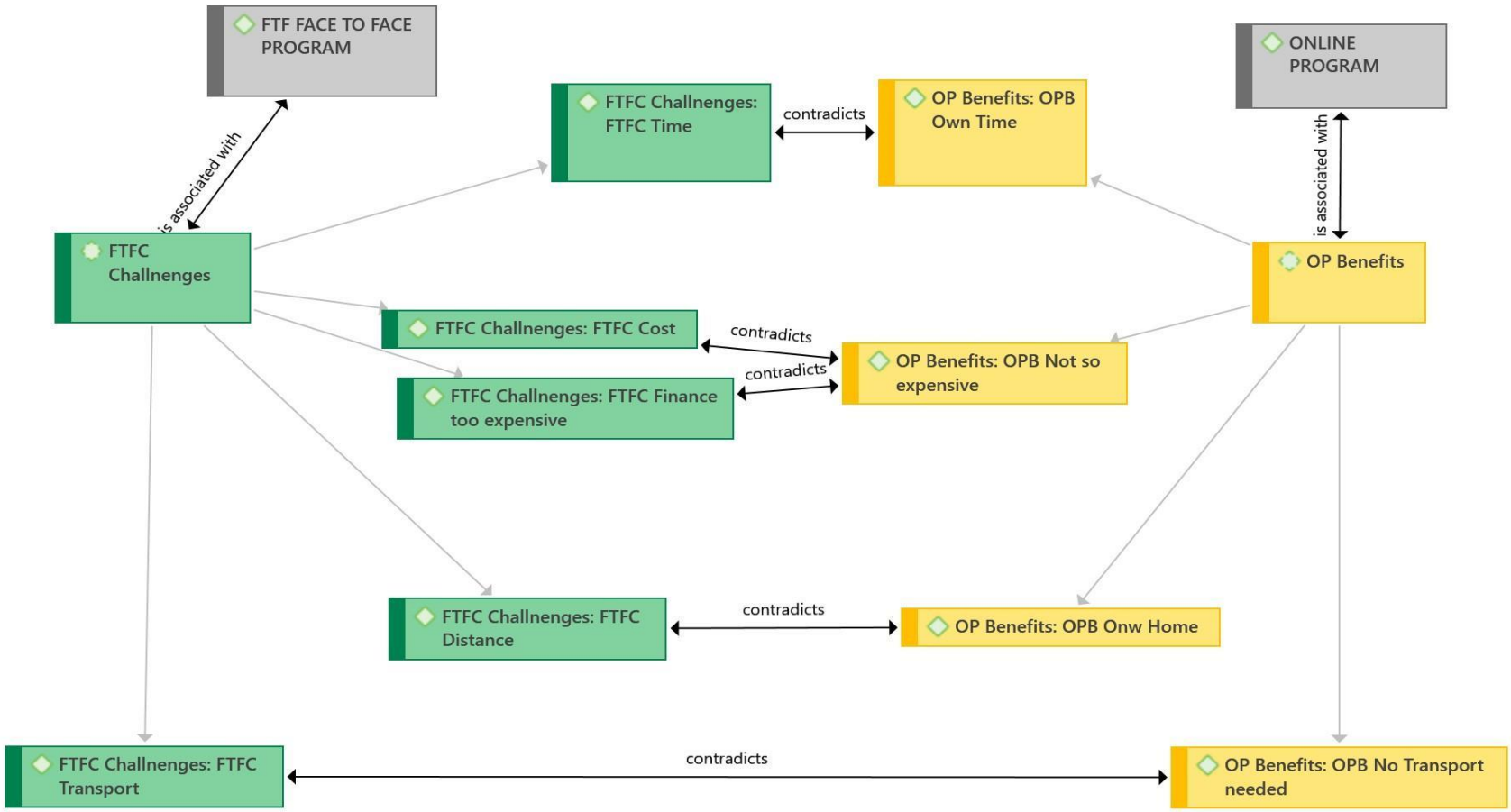

Figure 5.4 Comparing categories in the face to face and online network diagrams

From Figure 5.4 contradictions in the data are shown. These cover the views of participants on the online programmes and face to face programmes. Online programmes have been described as beneficial because they allow own time, are not so expensive, can be done in own home, with no transport needed. The face to face programmes require time, costs, they are too expensive and offered at a distance.

5.6 DATA INTERPRETATION

5.6.1 Introduction

The collected data will now be further analysed and interpreted to identify its contribution in answering the research questions.

5.6.2 Current and prevailing models of TPD and how theories informed them

It seems, according to the data, that there is currently more than one provider of TPD. Participants mentioned institutions such as The Association for the Education and Care of Young Children; UNISA; The OASIS (Online Affiliated School System); SA Childcare; EduExperts; and formal BEd Foundation Phase programmes through higher education institutions such as Aros. It is not clear from the data if these courses render any CPD points.

5.6.3 The scope and relevance of current online Continuous Professional Teacher Development models

The scope of themes and topics covered during CPTD programmes, according to the participants, as abstracted from the data are music; stimulation in the classroom; routine in the classroom; how to handle parents; and cognitive programmes. Information is also shared about learners with special problems such as autism. On the practical side, themes that can be used in class are discussed, as well as how to greet learners in the morning, how to make them aware of a recycling agenda, etc.

The participants experienced the attended programmes as valuable and relevant because it empowered them; they were confronted with new challenges; they gained new knowledge and they went home with new classroom ideas.

5.6.4 The different aspects of OTDP

The OTDP model for ECE teachers, illustrated in Figure 3.6, validates that professional development revolves around the profound exploration of ECE pedagogies and the seamless integration of digital literacies through exposure to contemporary and emerging information technologies. The challenge of deepening knowledge is acknowledged as a practical hurdle, prompting teachers to leverage innovations within school settings. Collaborative efforts with colleagues and experimentation with novel teaching approaches reflect the dynamic nature of knowledge enhancement. Teachers' perspectives, rooted in practical experiences, align with the theoretical framework, emphasizing the centrality of educators in the professional development process.

The pedagogical use of ICT, elucidated through both face-to-face and online programmes, emerges prominently in the study's data. The online format, perceived as more flexible and updated, underscores the adaptability of the theoretical framework, aligning with the broader emphasis on lifelong learning. The benefits identified in the study emphasize the value placed on interaction, knowledge sharing and peer learning, echoing the theoretical framework's spotlight on collaboration and active engagement in professional growth. Concurrently, limitations, primarily practical and financial, mirror the framework's acknowledgment of challenges within the educational landscape.

The OTDP model not only serves as a representation of professional development components and their interrelations but also aligns with the broader theoretical framework. The study's data, exploring these components and relations, delves into metaphorical expressions, framing the OTDP model as contextualized and rooted in

authentic caring. This metaphorical exploration enriches the interpretation of findings, connecting the theoretical framework's emphasis on teacher-centred development with the nuanced and caring aspects embedded within the OTDP model.

5.6.5 Practice and Policy implications for the teachers' roles of networker, researcher and innovator

The findings depicted in the data presentation in the network diagrams consistently underscore the significance of collaborative efforts, peer learning and the experimentation of teaching methods within the professional landscape. These observations align seamlessly with the stages of teacher development outlined in the theoretical framework, emphasizing the central role of educators as active learners, researchers and networkers, as discussed in Chapter 3.

The confirmation that teachers can effectively network in OTPD offerings serves to fortify their collaborative role and strategically supports policies aimed at the seamless integration of ICT in ECE. This finding not only aligns with the theoretical framework's emphasis on collaboration but also accentuates the practical implications for policy-making in the digital age.

Likewise, the facilitation of teachers' roles as innovators and researchers is evident in their exploration of enhanced pedagogical practices, capitalizing on the evolving possibilities of online learning. This aligns with the theoretical framework's view of teachers as creators of innovative instructional methods and active contributors to educational research. The rich possibilities identified in these findings underscore the dynamic nature of professional development, particularly in the context of ongoing advancements in digital education.

Furthermore, the delivery of PD for ECE teachers through online platforms emerges as a catalyst for lifelong learning, assuming sustained engagement in online

programme participation. This resonates with the theoretical framework's emphasis on educators as lifelong learners and aligns with the broader perspective of teachers actively shaping their professional growth through continuous engagement with digital resources and collaborative learning opportunities.

5.6.6 Interpretation and findings in terms of the theoretical framework

The UNESCO ICT-CFT model was modified and flipped to serve as the foundation for the study's theoretical framework. The OTDP model, which attempts to improve early childhood teachers' abilities in an online learning environment, was developed using this paradigm as its basis. The degree to which the study addresses its defined themes and objectives (see Chapter 1) and how well it fits within the theoretical framework influences how the findings are interpreted.

The results of the study provide strong evidence that the theoretical framework and the **modified and flipped ICT-CFT model** are compatible. The study emphasizes the value of professional development for teachers by putting them at the centre of the model. The three stages of teacher development (**knowledge acquisition, knowledge deepening and knowledge creation**) as discussed in Chapter 3, par. 3.2, highlight the progression of teachers' abilities and the pedagogical use of ICT. The findings further highlight teachers' engagement as lifelong learners, researchers and networkers which supports the emphasis on placing teacher professional development at the core of the framework.

According to the theoretical framework, educators should collaborate with one another and take an active role in their own lifelong learning (Chap 3, para 3.2). The empirical data stresses **collaboration and lifelong learning** in that teachers use digital literacy for online interactions, networking and collaboration as part of their activities. Moreover, the research supports this point by showing how teachers actively seek out networking and online interaction opportunities for professional development. The framework's central tenet that teachers are active learners who use digital literacy to

stay informed and share information is reinforced by this alignment. This corroborates the theoretical framework's emphasis on teachers as networkers and lifelong learners who foster continuous improvement and knowledge exchange.

Furthermore, the findings highlight how teachers adjust to shifts in education by learning new pedagogical practices. This is consistent with the theoretical framework's view of instructors as creators of innovation methods of instruction (Chap 3, par 3.2 and 3.3). The theoretical framework portrays teachers as both **researchers and innovators** who adapt to changing educational environments by learning new information. The study's findings offer empirical support for this idea, showing that teachers participate in professional development programmes to learn and adapt their pedagogy and to develop evidence-based knowledge. This correlation indicates how effectively the framework reflects the complex role of teachers in the digital age.

The findings further support the theoretical framework's assumptions about the implications for teachers' **networking, research** and **innovation** activities. The study demonstrates that teachers who participate in online professional development programmes do in fact have improved networking habits, partake in research-like activities and innovate their instructional strategies. The agreement between the findings and the framework strengthens the framework's usefulness in clarifying and directing teacher roles.

The findings can be used to argue for or against the inclusion of **adult learning theories** in the theoretical framework. The study offers empirical support for the framework's integration of these ideas by examining how online professional development programmes respond to the preferences and needs of adult learners. The findings can also be used to gauge how well the theoretical framework takes into account issues and suggestions and how the model solves difficulties faced by instructors in online professional development. The evidence therefore illustrates how the framework offers answers that are in line with adult learning theories and the changing role of teachers in creating successful learning experiences.

The OTPD model can be modified for **early childhood teachers** which is emphasized by the findings of the study. The model's potential to be applied in a variety of educational contexts is strengthened by its connection with the theoretical framework. It demonstrates how the fundamental ideas of the framework, such as teamwork and lifelong learning, are adaptable enough to meet various demands for professional growth. Likewise, the study's findings demonstrate how the thorough OTPD model, aided by the theoretical model, could enhance successful professional development initiatives in ECE. The study's examination of how this framework affects educational policies gives the theoretical foundations a real-world perspective and demonstrates how the framework fits with current educational trends and demands.

5.7 REFLECTIONS AND CONCLUDING REMARKS

This Chapter is a report of the research conducted, the data collected and the analyses on levels of content codes, categories and relations between and among categories. The research process benefited from the phenomenological design which enabled meaningful answers to the research questions.

Indicators of trustworthiness have been included in this chapter – and they include the activity reports showing the care taken by the researcher to get acquainted with staff in each preschool and explain the implications of their participation. Measures of triangulation contributed to credibility. Similarities across preschool settings and teacher views can be taken as indications of transferability and it is hoped that future researchers may consider using similar indicators. Care was also taken with the content analyses by hand and by means of Atlas Ti, to confirm codes and consistency across data types. The strong focus on identifying findings as data-based was a measure that helped the researcher keep her views in brackets.

In conclusion, it can be stated confidently that the Researcher has moved to the next chapter which advances the theory building part and knowledge synthesis and integration of this thesis.

5.8 SUMMARY

This chapter provides an overview of the research process, detailing the data methods and research activities employed in the study. The key findings illuminate the diverse ways in which teachers engage with and draw upon PD programmes, encompassing a spectrum from formal qualifications to Departmental and school-based initiatives. Notably, there is considerable variability in teachers' awareness and participation in CPTD programmes, with some well-informed while others remain less acquainted with available opportunities. Teachers actively collaborate with peers for their professional development, seeking valuable and engaging ideas. The identified CPD topics of relevance include sensory stimulation, cognitive development, music and pedagogies focusing on classroom organization, routines, appearance and stimulation.

The reported benefits and challenges of PD vary among teachers, with perceived advantages encompassing the acquisition of new ideas, self-empowerment, knowledge enrichment and a deeper understanding of emerging challenges. The chapter concludes with recommendations for CTPD, highlighting areas such as discipline, psychology, art, Down syndrome, mathematics, infant care, music and managing tantrum behaviour. These recommendations serve as valuable insights for enhancing the scope and effectiveness of future professional development initiatives.

CHAPTER 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The main goal of the final part of this academic work has been the in-depth analysis and thorough evaluation of current CPTD models. My principal area of research has been the field of online alternative models and this investigation has been carried out with steadfast attention to their scope, applicability and the underlying theoretical frameworks. Additionally, the main goal is to identify the essential elements of an ideal teacher's professional development model drawing on data gathered from ECE teachers. I try to capture the pinnacle of the study in this chapter, presenting the summary of key findings, the research conclusions and the implications that contribute to the larger academic discourse about effective OTPD approaches.

6.2 OVERVIEW

Chapter 1: Introduction: A model for online professional development of early childhood teachers in South Africa

I provided the framework for this study in Chapter 1 by problematizing the need for professional development given current realities of practice, outlining a thorough model for online professional development that is especially tailored to the particular requirements of early childhood teachers in South Africa. I give a summary of the purpose and aims of the study, as well as an overview of the theory and methodology in this chapter, emphasizing my effort to create a workable and contextually appropriate OTPD model.

Chapter 2: Contextual Review of Online Professional Development in ECE

In Chapter 2, the subject of ECE, an extensive contextual examination of online professional development is covered. I place my study in a larger context by means of a thorough analysis of the South African educational situation and pertinent international trends. I further lay the groundwork for understanding the unique

opportunities and problems faced by early childhood teachers in South Africa by identifying the important contextual elements that influence these challenges and opportunities.

Chapter 3: Conceptual and theoretical review of online professional development in ECE

The conceptual and theoretical foundations of online professional development in ECE are thoroughly explored in Chapter 3. I offer a conceptual overview and unpack various learning theories and theoretical framework, the flipped ICT-CFT framework, that guides the following development of my OTPD model. This chapter draws on well-established educational theories and cutting-edge pedagogical practices. These conceptual understandings acted as a compass for me as I worked to design an efficient and conceptually sound OTPD model.

Chapter 4: Research Methodology

I clarify the methodological underpinnings of my investigation in Chapter 4. The research approaches I used to create and evaluate the OTPD model are fully described in this chapter. I ensure the integrity and rigour of my study by detailing my qualitative research approach, phenomenological research design, data collection techniques and analytical approaches. This creates the foundation for a thorough inquiry of the performance of the suggested model.

Chapter 5: Data Analysis, Findings and Interpretation

The results of my research are presented in Chapter 5, where I carefully analyse the data generated for the study. In this chapter, I provide the research findings and offer an interpretation for each within the framework of the OTPD model. Sub-research questions were used to guide the data analysis, which was then followed by an appraisal of the relevant literature and an integration of the major findings. I hope to provide insightful information that will benefit professional development in the area of ECE in South Africa and elsewhere by illuminating the real-world consequences and significance of my results.

6.3 SUMMARY OF RESEARCH FINDINGS

6.3.1 Key findings related to the findings of this study

In order to build a comprehensive synthesis of scholarly findings, I draw on the literature discussed in Chapters 2 and 3 and integrate it as effectively as I could, with the empirical findings gathered from Chapter 5. Figure 6.1 provides a visual representation of the key findings and how they interact as the culmination of these components. The diagram serves as a guide, pointing us through a network of research sub-questions and their associated themes, ultimately illuminating the essence of our major research topic.

SECONDARY RESEARCH QUESTIONS	THEMES	QUESTION ANSWERED ACCORDING TO DATA GENERATION
QUESTION 1 What are the current and prevailing models of TPD and how are they informed by theories?	Theme one: Types of professional development programmes/ workshops attended Theme two: Benefits of attending face-to-face programmes/workshops Theme three: Challenges attending face-to-face programmes/workshops Theme four: Knowledge of CPD (Continuous Professional Development) points Theme six: Content of programmes attended Theme twelve: Skills needed by teachers in order to be able to attend online programmes	Multifaceted landscape characterised by diverse providers. Noteworthy institutions and various online platforms offer avenues for professional growth. However, the presence of Continuing Professional Development (CPD) points remains elusive from data. The data reinforces the notion that theories play a pivotal role in shaping professional development programmes, laying the groundwork for pedagogical approaches that underpin professional development initiatives.
QUESTION 2 How do current online alternative TPD models vary regarding scope and relevance?	Theme seven: Challenges of online programmes Theme eight: Benefits of online programmes Theme nine: Assessments in online programmes Theme eleven: Examples of activities shared and demonstrated in online programmes	Multiplicity of themes and topics encompassed by programmes. Themes ranging from music and classroom stimulation to routine management and practical classroom strategies have been highlighted. Notably, the participants' perception of the value and relevance of these programmes is a testament to their efficacy in empowering teachers.
QUESTION 3 Based upon the review of literature and data gathered in schools, what should form part of an OTDP?	Theme ten: Working with teachers from other preschools Theme twelve: Skills needed by teachers in order to be able to attend online programmes	Aspects of agency of teachers in shaping their professional growth. The data underscores the need for opportunities that empower teachers to self-select activities, assess their existing knowledge and effectively apply newly acquired knowledge in their classrooms. Furthermore, the importance of blended learning experiences, independence and personalization within an effective OTDP was evident.
QUESTION 4 What are the practice implications as well as policy implications for the teacher roles of networker, researcher and innovator?	Theme five: Recommendations for professional development programmes	Teachers' roles are evolving into networkers, researchers and innovators which align with the theoretical framework. The data reflects teachers' central position in professional development, casting them as keen learners and active networkers. The adaptability of teachers to evolving pedagogical practices underscores their role as innovators and researchers, perfectly reflecting the framework's description.

MAIN RESEARCH QUESTION:

What are the features of a model for online professional development of ECE teachers in South Africa that can be relevant and appropriate to address the current challenges teachers experience?

Figure 6.1. Summary of key findings

The key scholarly findings in the field of South African early childhood development and education (see Chapter 2, par. 2.2) highlight the distinctions between acronyms such as ECE, ECCE and ECD, emphasizing the importance of holistic child development. Additionally, these findings underscore the significance of proper infrastructure, the alignment of ECE with Sustainable Development Goals, the socio-economic context's impact on access to education and the potential benefits of ECE for disadvantaged children. They also reveal the risks and disparities in comprehensive child development in Africa, emphasizing the urgent need for equitable access to quality education.

The scholarly data presented in Chapter 2 further highlights significant challenges in South African ECE, including a lack of qualified and trained ECE practitioners and the presence of overcrowded classrooms in rural areas. Online professional development (PD) is proposed as a viable solution to address these issues, offering accessibility and content to improve the quality of ECE. Furthermore, the need for skills and knowledge in cognitive, intrapersonal and interpersonal domains is emphasized for ECE teachers and PD programmes should focus on developing these competencies. Overall, the findings underscore the urgency of professionalizing the ECE sector, particularly in underserved regions, to ensure equitable access to high-quality ECE.

Further, literature emphasizes the growing importance of professional development (PD) for early childhood teachers, especially in the context of Sustainable Development Goal 4.2. It highlights the existing challenges, such as a lack of qualified ECE teachers in South Africa and the need for continuous PD. The study also discusses the role of PD systems and programmes in supporting ECE teachers and presents an overview of the current state of PD in South Africa (see Chap 2, para 2.4.)

The importance of considering various adult learning theories in the context of OTPD for ECE teachers was also brought to the fore. Chapter 2 (par. 2.5) highlights that adults have distinct learning preferences and experiences, emphasizing the need for a tailored approach in PD programmes. The lack of integration of adult learning

principles in early childhood professional development and the need for empirical research in this regard was highlighted. Thus, integration of several adult learning theories including behaviourism, cognitivism, constructivism andragogy, heutagogy, paragogy, humanism and self-directed learning were suggested for their relevance to the PD of ECE teachers. Additionally, it mentions the hope for a generative curriculum in African education that considers local realities and child development. The literature reviewed underscores the significance of understanding how adults learn to design effective OTPD programmes for ECE teachers, especially in the African context.

In terms of the learning theories surveyed, a summary of each one is provided as a contribution to the key scholarly findings of this study (see 2.5.1 to 2.5.9). Behaviourism is a learning theory that emphasizes the role of external stimuli and rewards in shaping behaviour, focusing on knowledge acquisition in the context of the ICT-CFT theoretical framework, but it is limited in its understanding of thinking processes and this study aims to investigate early childhood teachers' experiences and needs in professional development programmes. Cognitivism emerged as a learning theory in response to the limitations of behaviourism, focusing on the importance of internal mental processes and individual understanding of relationships between elements, with this study emphasizing the need for teachers to actively participate and make their own contributions to their professional development in an online interactive environment. Constructivism, particularly in the context of heutagogy, emphasizes that learners construct knowledge through authentic experiences, collaboration and active engagement, which aligns with the study's goal of facilitating teacher learning through online interactions and knowledge creation. Andragogy highlights the self-directed and independent nature of adult learners who draw from their life experiences, have intrinsic motivation and seek practical applications for their learning, emphasizing the importance of self-directed learning, which is pertinent to the study's focus on online professional development for adult teachers. Paragogy, a peer-to-peer learning and teaching approach, emphasizes learner autonomy, interactivity and collaborative knowledge-sharing within a dynamic and co-created learning context, drawing upon principles of andragogy adapted to peer-based learning. Heutagogy, a learner-centric approach that empowers individuals to take control of their learning process, especially when facilitated by

technology, is well-suited for 21st-century educators and learners who seek active involvement in skill development and knowledge acquisition and this approach's integration with technology will provide teachers with a platform to communicate, collaborate, create, connect and reflect in their professional development. Humanism as a learning theory focuses on individual growth and development, emphasizing self-directed learning, relevance to personal interests and a holistic educational experience, making learners responsible for their own learning and encouraging personal connections to enhance academic and skills development. Self-directed learning involves individuals taking initiative to diagnose their learning needs, set goals, identify resources and evaluate outcomes and it is a vital concept in adult education, characterized by self-monitoring, self-management and motivation, with teachers' professional development benefiting from a model that encourages personal responsibility and control over the learning process. African Philosophy of Education (APE) emphasizes reflective creativity, moral values and the concept of ubuntu, promoting education with a moral purpose based on social and cultural values. Contrastingly, challenges in African education systems include the need for diversification of teaching approaches, insufficient funding for research and professional development and the complexities of addressing staffing issues amidst increased teacher workloads and imbalances in the teacher-student relationship.

Furthermore, the integration of various learning theories into the ICT-CFT theoretical framework of this study demonstrates their interconnectedness with digital education and offers implications for teacher professional development. Behaviourism, emphasizing knowledge acquisition, aligns with the aim of teacher learning in remembering learned behaviours and engaging in lifelong learning through digital knowledge acquisition. Cognitivism, focusing on making learning engaging and motivating, suits the online interaction between teachers, promoting self-regulated learning and resource sharing. Constructivism, aiming to facilitate knowledge construction and sense-making from experiences, highlights the role of teacher educators in encouraging teachers to create meaning and engage in knowledge creation through self-management. Andragogy's emphasis on autonomous, self-directed learning aligns with the role of teacher educators in supporting teachers as they acquire new pedagogical knowledge. Heutagogy, driven by technology for lifelong

learning, creates virtual learning environments and encourages teachers to take control of their learning and explore through digital tools. Paragogy, based on peer-based learning, involves teachers as co-creators of knowledge alongside peers. Humanism, with its focus on self-actualization, independence and lifelong learning, underscores the role of teacher educators in facilitating this process, integrating digital literacy. Self-directed learning promotes learning improvement through interactions, network building in online chatrooms and knowledge creation. Finally, African perspectives on learning, primarily centred on survival, community involvement, unity and consensus, may benefit from digital education but currently maintain separate gender education and strong community engagement.

Findings from scholarly evidence show that the COVID-19 pandemic has significantly impacted the education sector, particularly higher education, prompting a shift to online learning. This transformation has opened new opportunities and challenges for teachers' professional development (PD). Online learning, facilitated by digital technologies, has become a crucial platform for PD, offering flexibility and accessibility for teachers who may have various responsibilities beyond their professional duties. This shift has empowered educators to become more independent learners and enhance their techno-pedagogical skills. However, it also presents challenges such as technical issues, lack of equipment and unclear regulations. Despite these challenges, online learning offers advantages, including effective teaching tools, multimedia content creation, improved critical thinking and problem-solving skills. It allows for remote learning, reduces costs and administrative tasks and supports self-directed asynchronous learning. For teachers in lower socio-economic backgrounds who face barriers to attending in-person TPD programmes, online learning offers a more accessible and flexible option. It addresses the growing need for educators to regulate their own learning and balance educational development with personal responsibilities, ultimately providing a valuable avenue for teacher professional development in the digital age.

6.3.2 Key empirical findings

The primary purpose of this research was to respond to the question, "What are the features of a model for online professional development of ECE teachers in South Africa that can be relevant and appropriate to address the current challenges ECE teachers experience?" The summary of the results that follows is the key to understanding this research enquiry.

This study thoroughly examined how the data was interpreted with the goal of elucidating how it relates to the topic of investigation. The key empirical evidence presented here highlights several aspects of Teacher Professional Development models, the contribution of educational theories to their development, the breadth and complexity of OTDP and the implications of these data for teachers' roles as networkers, researchers and innovators.

According to the data, there are many different types of OTPD providers, including prestigious organizations like The Association for the Education and Care of Young Children, UNISA, The OASIS, SA Childcare, EduExperts and official BEd Foundation Phase programmes. From the statistics, it is unclear whether these courses have Continuing Teacher Professional Development (CTPD) points, though.

The key empirical results demonstrate the wide range of themes and subjects covered by OTPD programmes. These topics include everything from the mellow world of music to the intricate details of classroom stimulation and the art of routine management. Themes like morning pleasantries and environmental conscience are easily incorporated into professional development, with practicality and applicability being of utmost importance. An interesting component of the results is how the participants saw these workshops as empowering and knowledge-enriching.

The findings reveal a comprehensive picture of the OTDP, highlighting the influence of teachers on students' professional development. The results highlight the significance of providing teachers with the chance to choose activities on their own, evaluate their prior knowledge and successfully apply new knowledge in the classroom. According to the statistics, an efficient OTDP should offer a blended learning environment that promotes independence, individualization and regular

interventions. Diverse assessment methods are thought to be required for reinforcing existing knowledge and creating links between the curriculum.

Key empirical findings are in line with the theoretical framework, highlighting the importance of teachers in networking, lifelong learning and professional growth. The data supports the framework's portrayal of educators as enthusiastic learners and networkers by showing them as active participants in online interactions, networking and collaborative activities. The framework's presentation of teachers as researchers and innovators is strengthened by their ability to adapt to changing instructional approaches. The results show that the online professional development experience significantly improves teachers' networking, research and innovation skills. The analysis of online professional development programmes that respond to learners' preferences and needs provides empirical support for the incorporation of adult learning theories within the theoretical framework.

Findings highlight the study's alignment with the UNESCO ICT-CFT model, updated and flipped to serve as the theoretical framework. The information highlights the importance of professional development for educators, placing them at the centre of the approach. The three phases of teacher development—knowledge acquisition, knowledge deepening and knowledge creation—highlight the development of teachers' competencies and ICT pedagogical use. The results emphasize teachers' participation in research, networking and lifelong learning, firmly placing teacher professional development at the centre of the framework.

Aspects of significant teacher professional development models, the applicability of and the scope of OTDP and the changing roles of early childhood teachers in the digital age have all been highlighted by significant empirical findings. These findings provide insight to structuring efficient professional development programmes and coordinating them with the changing educational landscape, acting as a link between the theoretical framework and the real world.

6.4 EARLY CHILDHOOD PROFESSIONAL DEVELOPMENT AS AUTHENTIC CARING

In working towards concluding this study, the researcher conceptualised a metaphor integrating the theoretical framework, the Flipped ICT-CFT model, the various concepts gleaned from the literature and the evidence in the data. This metaphor as depicted in Figure 6.1 below is akin to a blooming garden. In the same way that a garden requires careful tending, deliberate planning and a harmonious blending of various elements, professional development in ECE necessitates the nurturing of knowledge, the deliberate design of a supportive environment and the cultivation of a caring ethos. According to this concept, online environments act as the ideal conditions for learning and the development of teachers' competences is comparable to caring for a flourishing garden. This concept encourages constructive engagement and activities with teachers about their professional development, promoting an environment of genuine care and holistic growth, just as a well-tended garden produces blooming flowers. The various elements of the garden, in relation to this study and the intended use of the model, are presented below.

Figure 6.1: Early Childhood Education Teacher Professional Development as Authentic Caring

1. *Teachers as seedlings*: The ECE teachers represent the potential seedlings, each with unique requirements and skills. The approach places emphasis on appreciating and respecting each teacher's uniqueness well represented in the data reported in Chapter 5, understanding that their development is necessary for professionalising ECE.

2. *Ethics of Care as Soil*: This study compares the supportive environment that fosters teachers' development to fertile soil. It provides a caring and understanding foundation for teachers' professional development, embodying the ethics of care. This metaphor of soil represents the school and classroom settings in ECD, enhanced by sincere care and encouragement, guarantees that ECE teachers are enabled to flourish.

3. *Teachers' voices as Sunlight*: The rich sunshine that fosters growth and development in the garden is provided by the warmth of teachers' voices and how they express their care of children as everyday practice and lived experiences. Teachers' voices are crucial to this concept, just like sunlight is necessary for life in the garden. It is posited that teachers need to be involved in understanding and engaging in their own development. Through the process of amplifying these voices, the metaphor emphasises using ECE teachers' insights to promote their professional development.

4. *Contextual Responsiveness as Rain*: The metaphor included contextual responsiveness, much like a garden needs rain to thrive to its full potential. It recognizes that South Africa's educational landscape is shaped by a variety of environmental and contextual factors. Consequently, this notion ensures that ECE teachers receive ample and individualized support by adjusting and providing resources based on the particular scenario.

5. *Authenticity as Blossoming Flowers*: In the spaces where ECE teachers work and need development support, as a metaphorical garden, the blooming flowers represent authenticity. ECE teachers are urged to be authentic and to openly embrace their own professional development.

Like flowers in full bloom, the metaphor celebrates the authenticity of teachers as they engage in self-regulated learning, gain new expertise and grow professionally.

6. *Research, Innovation and Networking as Vibrant Petals*: The theoretical framing of the study includes the concepts of networking, research and innovation skills. These concepts function as the unique, colourful petals of empowered early childhood educators' flowers. These capacities add vitality and colour to the educational garden, fostering a vibrant ecosystem of growth and professional development in ECE.

7. *Collaboration as Pollinators*: In this model, teacher and mentor collaboration is critical, just as bees and butterflies are important for pollination. Through online interactions, ECE teachers in South Africa can communicate ideas and experiences, leading to a dynamic interchange of knowledge and insights that can improve their own development and ultimately, the state of ECE.

Online environment as Virtual Garden: The overall illustration of a virtual garden represents the online environment, which caters to the particular needs of South African ECE teachers and provides accessibility, affordability and ways to overcome obstacles. The illustration fosters a thriving digital educational environment in South Africa by pledging that teachers have a space to grow and flourish, despite physical obstacles or constraints.

6.5 RESEARCH CONCLUSIONS

Firstly, the research's conclusions have policy implications, including the importance of professionalizing the ECE sector, ensuring that all individuals have access to high-quality ECE and coordinating policies with Sustainable Development Goal 4.2, which highlights the significance of high-quality ECE.

Furthermore, the conclusions at a practice level highlight the need of improving teachers' cognitive, intrapersonal and interpersonal competences. In line with the holistic approach to child development, OTPD programmes should encourage ECE teachers to use their critical thinking, problem-solving, creativity and self-regulated learning skills. The study accentuates the value of ongoing investigation of OTPD for ECE teachers, particularly in the African context. Empirical studies are required to evaluate the efficiency of OTPD programmes and their effect on teacher learning outcomes.

OTPD has much potential as a solution to the problems faced by early childhood teachers in South Africa. These difficulties include a dearth of certified teachers, overcrowded classrooms and limited access to conventional on-site professional development programmes. Moreover, both the benefits and barriers of online learning are recognised. OTPD provides technical challenges, equipment limitations and the necessity for precise regulations, but it also offers flexibility, accessibility and cost-effectiveness. Despite this, significant value is placed on the contribution that technology makes to improving ECE quality and fostering teacher professional growth. Improved technological pedagogical abilities, the production of multimedia content and interactive teaching resources made available by OTPD can all be beneficial to ECE teachers.

As a theoretical contribution, OTPD benefits from incorporating a variety of learning theories, such as behaviourism, cognitivism, constructivism and others, in order to better understand teacher professional development and its relationship to digital education. Further the significance of designing OTPD programmes to accommodate ECE teachers' various needs and preferences are highlighted. To produce interesting and pertinent learning experiences, this personalisation should be in line with adult learning theories like andragogy, heutagogy and self-directed learning. Conceptually this implies that OTDP needs to be theory-based. Similarly, the importance of putting ECE teachers at the core of their professional development is underscored by the findings. In their pursuit of knowledge, teachers ought to be proactive participants, researchers, networkers and innovators. Viewed broadly, the research concludes that

OTPD would need to enable ECE teachers to develop their capacity as autonomous learners, adapt to shifting pedagogical paradigms and enhance their networking, research and innovation abilities.

In summary, the study finds that adult learning theories, technology and online professional development tailored to the needs of ECE teachers hold great promise for addressing issues in ECE in South Africa and fostering the holistic development of both teachers and children. The knowledge contribution is represented in the model of OTDP which can be used to understand development needs of ECD teachers and as basis for decision making about CTPD. The garden metaphor is valuable for acknowledging and promoting early childhood work as authentic caring. This is expected to recognize the need for and value of consistent policy and continuing research in this critically important field.

6.6 IMPLICATIONS

The theoretical, practical and policy implications of the study reveal the need for highly specific, technologically advanced and teacher-centred online professional development in order to overcome obstacles and improve the comprehensive development of ECE in South Africa. Based on findings of the study, there are several implications at theoretical, practice and policy levels:

- The study highlights the value of incorporating different learning theories, such as behaviourism, cognitivism, constructivism andragogy, heutagogy, paragogy, humanism and self-directed learning, into the theoretical framework for ECE OTPD. In order to accommodate the various requirements and preferences of adult learners, this integration fits with the complex and diversified nature of teacher professional development.
- The theoretical framework places teachers at the centre of their professional growth, emphasising their responsibilities as engaged participants, researchers, networkers and innovators. This learner-centric viewpoint emphasizes the

significance of personalising OTPD to their unique needs and settings while acknowledging teachers' agency in directing students' educational experiences.

- The study emphasizes the necessity of high-quality ECE for all children and the relevance of ECE to SDG 4.2. This theoretical congruence highlights the importance of supporting ECE teachers' professional growth in order to ensure equal access to high-quality education.
- According to the study, online professional development should be personalised to accommodate ECE teachers' various needs and interests. To design interesting and efficient OTPD programmes, this customisation takes into account adult learning principles including self-directed learning, collaborative knowledge-sharing and learner autonomy.
- OTPD can be a workable answer to problems in ECE such as a shortage of competent teachers. Through the creation of multimedia content and interactive teaching tools, integrating technology into professional development enables teachers to increase the quality of ECE and their techno-pedagogical skills.
- The study underscores how critical it is to help instructors improve their abilities in the cognitive, intrapersonal and interpersonal domains. OTPD programmes should support ECE instructors' development of critical thinking, problem-solving, creativity and self-regulated learning.
- The results highlight the urgency of responsiveness and professionalization of the ECE sector, particularly in areas where services are inadequate. The goal of policy should be to encourage teachers' ongoing professional development and to ensure that all children have access to high-quality ECE, through professional development of high-quality ECE teachers.
- The constructed model of OTPD is the knowledge contribution of this study, advancing specific ways of looking at ECE practices at school level and encouraging practitioners as well as officials and policy makers to value authentic caring as change focus in ECE.
- Policymakers should be aware of the advantages of online learning, especially its adaptability and accessibility. The difficulties faced by ECE teachers, such as time constraints and location limitations, can be addressed through OTPD, which provides a flexible and affordable approach of professional development.

- Policymakers ought to stress the value of high-quality ECE by aligning ECE policy with Sustainable Development Goal 4.2. This alignment highlights how important it is to support ECE teachers' professional growth in order to ensure all children have access to high-quality education, especially those who are less privileged.

6.7 AVENUES FOR FURTHER RESEARCH

Further research evaluating the efficacy of particular OTPD programmes would be beneficial. The effects of various online professional development approaches on teacher learning outcomes, classroom practices and student outcomes can be assessed through comparative research. The optimal methods for designing and delivering OTPD could be identified.

In addition, future studies can also examine how OTPD can be made more inclusive given the emphasis on equitable access to education. This entails researching ways to reach teachers in underprivileged and remote locations, overcoming communication difficulties and assisting teachers with a variety of needs and backgrounds.

Lastly, research could focus on how newly developed technologies, such as augmented reality, virtual reality and artificial intelligence, can be applied in OTPD to improve teacher learning experiences and classroom practices as technology grows in sophistication.

6.7 LIMITATIONS OF THE STUDY

Possible limitations to the study were the likelihood of researcher bias as there was a close relationship between the researcher and the participants as the participants will share their lived experiences. The researcher took the utmost care not to get involved in any way and not add her own ideas or story. Another limitation could be the sampling size of the participants and the generalization of the findings which could not be a profound understanding of the phenomenon for the entire early childhood population of teachers in South Africa.

6.8 CONCLUDING REMARKS

Professional development of ECE cannot be underestimated by teachers themselves, as well as policy makers and those responsible for implementation. The model produced in this study is based upon experiences and views of teachers in the field and is an instrument which can be used in conversations about changes in ECE on all levels – from schools to districts. The study expresses a vision of growing a culture of caring in ECE and grounding day to day decisions on PD on the richness of classroom ecologies.

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APPENDIX A: Ethical clearance certificate

UNISA university of south africa

UNISA COLLEGE OF EDUCATION ETHICS REVIEW COMMITTEE

Date: 2022/02/09

Ref: **2022/02/09/44582463/15/AM**
Name: Prof LM van der Westhuizen
Student No.: 44582463

Dear Prof LM van der Westhuizen

Decision: Ethics Approval from 2022/02/09 to 2027/02/09

Researcher(s): Name: Prof LM van der Westhuizen
E-mail address: 44582463@mylife.unisa.ac.za
Telephone: 0832632645

Supervisor(s): Name: Dr DM Hannaway
E-mail address: hannad@unisa.ac.za
Telephone: 0832632645

Title of research:

A model for online professional development of early childhood teachers in South Africa

Qualification: PhD Early Childhood Development

Thank you for the application for research ethics clearance by the UNISA College of Education Ethics Review Committee for the above mentioned research. Ethics approval is granted for the period 2022/02/09 to 2027/02/09.

*The **medium risk** application was reviewed by the Ethics Review Committee on 2022/02/09 in compliance with the UNISA Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.
2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the UNISA College of Education Ethics Review Committee.
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
8. No field work activities may continue after the expiry date **2027/02/09**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number **2022/02/09/44582463/15/AM** *should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Kind regards,

Prof AT Motlhabane
CHAIRPERSON: CEDU RERC
motlhat@unisa.ac.za

Prof PL Mabunda
DEPUTY EXECUTIVE DEAN
mabunpl@unisa.ac.za

APPENDIX B: Interview schedule with individual teachers

Semi-structured interview schedule for interviews with individual teachers

1. Can I start by asking how long have you been teaching in early childhood development?
2. What is the highest qualification in the early childhood education you have obtained?
3. Have you always been teaching at the same school/district?
4. What do you know about teacher professional development?
5. Have you attended any teacher professional development programmes and if so, which ones? (Probe for more information if needed)
6. What content was involved in these programmes? What was specifically done in these programmes? What activities did you do?
7. How do you feel about attending teacher professional development programmes?
8. What challenges do you think teachers experience to attend face-to-face professional development programmes?
9. What do you see as the benefits of attending face-to-face teacher professional development programmes?
10. What is your school's policy about teacher professional development? Are you encouraged to attend these programmes?
11. Do you know of other ECE teachers experiencing the same problems as you?
12. What recommendations can you make for teacher professional programmes?
13. How do you feel about an online teacher professional development programme?
14. What are the benefits of attending online teacher professional development programmes?
15. What are the challenges of attending online teacher professional development programmes?
16. What skills do you think teachers will need to be able to use the online teacher professional development programme?
17. What recommendations can you make for such an online programme?
18. Do you think working with other pre-school teachers is beneficial and why do you say so?
19. In any online programmes you attended was there any form of assessment done such as quizzes or questionnaires?
20. What do you know about CPD points for teachers and specifically pre-school teachers?
21. Can you give me names of other ECE teachers will be willing to talk to me about their experiences in attending teacher professional development programmes?

APPENDIX C: Focus group interview schedule with teachers

Focus groups interview schedule

Study on PD ECE

Welcome and thank you -

Purpose -

Confidentiality -

1. Can you give me more information on the teacher professional development programmes available for ECE teachers that you know of, or that you have attended in the past?
2. Please provide me with more information about what these programmes entail. The course content, how long it took to complete the course, how many participants were you on these courses?
3. How often can teachers attend these professional development programmes?
4. Who oversees these programmes?
5. Who are the presenters of these programmes?
6. What incentives are there for teachers who attend these professional development programmes?
7. What barriers do you think teachers experience with attending teacher professional development programmes?
8. What benefits do you think an online teacher professional development programme will have for the teachers?

APPENDIX D: Requesting permission from teacher participants to conduct research

February 2022

LETTER OF CONSENT FOR RESEARCH

Dear teacher

I am a PhD student form the University of South Africa. I am required to do research as part of my post-graduate studies. The topic of teacher professional development programmes is of particular interest to me, and I have therefor chosen A *model for online professional development of early childhood teachers in South Africa* as my focus.

It is my aim to select ECE teachers that experience difficulty in attending teacher professional development programmes due to several barriers. I would therefore, like to request your consent to involve you in my study. Firstly, I would like to have a telephonic conversation with you to explain the nature and intent of my study. After that I would like to schedule a telephonic interview with you where I would want to understand your specific profile regarding attending professional teacher development programmes. I would like to arrange a time that will be suitable for you. Please note that the interview will be audio recorded for future reference by me and my supervisor.

I can assure confidentiality and anonymity by omitting your name in any publications where you wish to remain unknown. Only my supervisor and I will have access to the raw data. I will also ensure that you will not be harmed in any way through the research. Please be informed that the respective research may be terminated should you wish to end participation in this study. At similarly, should the data collection process elicit negative outcomes, your participation in my study will be terminated.

Where necessary, I will adhere to any Covid-19 protocols laid out by the school and government to ensure the safety of the participants involved.

Taking part in this study will give you the opportunity to reflect on the professional development programmes available and to gain insight in how it affects your teaching. It will also potentially highlight, to various role players in ECE teaching, the strengths, and weaknesses of attending teacher professional development programmes.

Please read the Participant Information Sheet.

Should you agree, please sign the letter of consent below.

Should you wish to query anything further, please feel free to contact me.

Your assistance is greatly appreciated.

Prof Leonie van der Westhuizen

Student

Cell: +27 832632645

Email: leonie@ca2000.co.za

Dr D Hannaway

Supervisor

PQM College of Education, University of South Africa

APPENDIX E: Requesting permission from principal to conduct research

February 2022

LETTER OF CONSENT FOR RESEARCH

Dear Principal

I am a PhD student from the University of South Africa. I am required to do research as part of my post-graduate studies. The topic of teacher professional development programmes is of particular interest to me, and I have therefore chosen *A model for online professional development of early childhood teachers in South Africa* as my focus.

It is my aim to select ECE teachers that experience difficulty in attending teacher professional development programmes due to several barriers. I would therefore, like to request your consent to involve _____ in my study. Firstly, I would like to have a telephonic conversation with him/her to explain the nature and intent of my study. After that I would like to schedule a telephonic interview with him/her where I would want to understand her specific profile regarding attending professional teacher development programmes. I would like to arrange a time that will be suitable for him/her. Please note that the interview will be audio recorded for future reference by me and my supervisor.

I can assure confidentiality and anonymity by omitting his/her name and the name of the school in any publications where you wish to remain unknown. Only my supervisor and I will have access to the raw data. I will also ensure that he/she will not be harmed in any way through the research. Please be informed that the respective research may be terminated should he/she wish to end participation in this study. Similarly, should the data collection process elicit negative outcomes, his/her participation in my study will be terminated.

Taking part in this study will give your teacher the opportunity to reflect on the professional development programmes available and to gain insight in how it affects his/her teaching. It will also potentially highlight, to various role players in ECE teaching, the strengths, and weaknesses of attending teacher professional development programmes.

I shall gain the necessary permission from the various role-players (the Department of Education, the ethical committee at the University of South Africa and the teachers) to conduct my study. Once

permission has been granted, I shall arrange a convenient time with the teachers to begin my data collection without infringing on their teaching or learning time.

Where necessary, I will adhere to any Covid-19 protocols laid out by the school and government to ensure the safety of the participants involved.

Should you agree please sign the letter of consent below.

Should you require any further information, please feel free to contact me.

Your approval and assistance are greatly appreciated.

Prof Leonie van der Westhuizen
Student
Cell: +27 832632645
Email: leonie@ca2000.co.za

Dr D Hannaway
Supervisor
PQM College of Education, University of South Africa

APPENDIX F: Requesting permission from GDE to conduct research

Dear Director of Research

LETTER OF CONSENT FOR RESEARCH

I am a PhD student form the University of South Africa. I am required to do research as part of my post-graduate studies. The topic of teacher professional development programmes is of particular interest to me, and I have therefor chosen A *model for online professional development of early childhood teachers in South Africa* as my focus.

It is my aim to select ECE teachers that experience difficulty in attending teacher professional development programmes due to several barriers. I would therefore, like to request your consent to involve _____ in my study. Firstly, I would like to have a telephonic conversation with him/her to explain the nature and intent of my study. After that I would like to schedule a telephonic interview with him/her where I would want to understand her specific profile regarding attending professional teacher development programmes. I would like to arrange a time that will be suitable for him/her. Please note that the interview will be audio recorded for future reference by me and my supervisor.

I shall gain the necessary permission from the various role-players (the Department of Education, the ethical committee at the University of South Africa and the teachers) to conduct my study. Once permission has been granted, I shall arrange a convenient time with the teachers to begin my data collection without infringing on their teaching or learning time.

I will ensure confidentiality and anonymity by omitting teachers' names and the names of their schools in any publications. Only my supervisor and I will have access to the raw data. I will also assure you that teachers will not be harmed in any way. Please be informed that the respective research may be terminated should the principal or the teachers wish to end participation in this study. Similarly, should the data collection process elicit negative outcomes, participation in my study will be terminated.

Where necessary, I will adhere to any Covid-19 protocols laid out by the school and government to ensure the safety of the participants involved.

Taking part in this study will give the teachers the opportunity to reflect on the professional development programmes available and to gain insight in how it affects their teaching. It will also

potentially highlight, to various role players in ECE teaching, the strengths, and weaknesses of attending teacher professional development programmes.

Should you require any further information, please feel free to contact me.

Your approval and assistance are greatly appreciated.

Prof Leonie van der Westhuizen
Student
Cell: +27 832632645
Email: leonie@ca2000.co.za

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

For admin. use

GDE RESEARCH REQUEST FORM

REQUEST TO CONDUCT RESEARCH IN INSTITUTIONS AND/OR OFFICES OF THE GAUTENG DEPARTMENT OF EDUCATION

1. PARTICULARS OF THE RESEARCHER

1.1	**Details of the Researcher**
Surname and Initials:	Van der Westhuizen L M
First Name/s:	Leonie Magdalena
Title (Prof / Dr / Mr / Mrs / Ms):	Prof
Student Number (if relevant):	44582463
SA ID Number:	5408260081088

1.2	Private Contact Details
Home Address	Postal Address (if different)
322 Boekenhout street	P O Box 8464
Eldoraigne	Centurion
Centurion	

Postal Code: 0157	Postal Code: 0046
Tel: N/A	
Cell: 0832632645	
Fax: N/A	
E-mail: leonie@ca2000.co.za	

2. PURPOSE & DETAILS OF THE PROPOSED RESEARCH

2.1	Purpose of the Research (Place cross where appropriate)
Undergraduate Study - Self	
Postgraduate Study - Self	X
Private Company/Agency – Commissioned by Provincial Government or Department	
Private Research by Independent Researcher	
Non-Governmental Organisation	
National Department of Education	
Commissions and Committees	
Independent Research Agencies	
Statutory Research Agencies	
Higher Education Institutions	

2.2	Full title of Thesis / Dissertation / Research Project
A model for online professional development of early childhood teachers in South Africa	
2.3	**Value of the Research to Education (Attach Research Proposal)**
Improvement of the professional development of early childhood teachers in South Africa	
2.4	**Date**

Envisaged date of completion of research in GDE institutions	**May 2022**
Envisaged date of submission of Research report and Research Summary to GDE	**August 2023**

2.5	**Student and Postgraduate Enrolment Particulars (if applicable)**
Name of institution where enrolled:	**UNISA**
Degree / Qualification:	**PhD Education Early Childhood**
Faculty and Discipline / Area of Study:	Department of curriculum studies
Name of Supervisor / Promoter:	Dr Donna Hannaway (PQM School of Education, University of South Africa)

2.6	**Employer (where applicable)**
Name of Organisation:	Centurion Academy
Position in Organisation:	Head of School of Education, Early Childhood Development
Head of Organisation:	Mr T Schoeman
Street Address:	1023 Bank Ave Centurion
Postal Code:	1057
Telephone Number (Code + Ext):	012 663 6333
Fax Number:	
E-mail:	theo@ca2000.co.za

2.7	**PERSAL Number (GDE employees only)**						

PROPOSED RESEARCH METHOD/S

(Please indicate by placing a cross in the appropriate block whether the following modes would be adopted)

Questionnaire/s (If Yes, supply copies of each to be used)

YES		**NO**	**X**

Interview/s (If Yes, provide copies of each schedule)

YES	**X**	**NO**	

Use of official documents

YES		**NO**	**X**
If Yes, please specify the document/s:			

Workshop/s / Group Discussions (If Yes, Supply details)

YES	**x**	**NO**	**X**
Focus group interviews			

Standardised Tests (e.g. Psychometric Tests)

YES		**NO**	**X**
If Yes, please specify the test/s to be used and provide a copy/ies			

INSTITUTIONS TO BE INVOLVED IN THE RESEARCH

Type and NUMBER of Institutions (Please indicate by placing a cross alongside all types of institutions to be researched)

INSTITUTIONS	**Write NUMBER here**
Primary Schools	
Secondary Schools	
ABET Centres	
ECD Sites	± 10
LSEN Schools	
Further Education & Training Institutions	
Districts and/ or Head Office	

Name/s of institutions to be researched (Please complete on a separate sheet if space is found to be insufficient)

Name/s of Institution/s
Riobamba crèche
Polka dot Play to learn pre-school
Babbel en Krabbel crèche
Angels academy pre-primary school
Bambi nursery school
Regio Cebturion pre-primary school

Inloco parentis
Situala pre-primary school
Grasslands nursery school
Happy Hippo nursery school

Districts where the study is to be conducted. (Please indicate by placing a cross alongside the relevant district/s))

District			
Ekhuruleni North		***Ekhuruleni South***	
Gauteng East		***Gauteng North***	
Gauteng West		***Johannesburg Central***	
Johannesburg East		***Johannesburg North***	
Johannesburg South		***Johannesburg West***	
Sedibeng East		***Sedibeng West***	
Tshwane North		***Tshwane South***	**X**
Tshwane West			

If Head Office/s (Please indicate Directorate/s)

Number of learners to be involved per school (Please indicate the number by gender)

Grade	1		2		3		4		5		6	
Gender	B	G	B	G	B	G	B	G	B	G	B	G
Number												

Grade	7		8		9		10		11		12	
Gender	B	G	B	G	B	G	B	G	B	G	B	G
Number												

Number of educators/officials involved in the study (Please indicate the number in the relevant column)

Type of staff	Educators	HODs	Deputy Principals	Principal	Lecturers	Office Based Officials
Number	± 10					

Are the participants to be involved in groups or individually?

Groups	**x**	Individually	**x**

Average period of time each participant will be involved in the test or other research activities (Please indicate time in minutes)

Participant/s	Activity	Time
Teachers	In-depth individual interviews	60 min
Teachers and SACE employees	Focus group interview	60 min

Time of day that you propose to conduct your research.

During school hours (for limited observation only)		After School Hours	X

School term/s during which the research would be undertaken

First Term	-	Second Term	x	Third Term	

CONDITIONS FOR CONDUCTING RESEARCH IN GDE

Permission may be granted to proceed with the above study subject to the conditions listed below being met and may be withdrawn should any of these conditions be flouted:

The District/Head Office Senior Manager/s concerned, the Principal/s and the chairperson/s of the School Governing Body (SGB) must be presented with a copy of this letter.

The Researcher will make every effort obtain the goodwill and co-operation of all the GDE district officials, principals, SGBs, teachers, parents and learners involved. Participation is voluntary and additional remuneration will not be paid;

Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.

Research may only commence from the second week of February and must be concluded by the end of the THIRD quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.

Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.

It is the researcher's responsibility to obtain written consent from the SGB/s; principal/s, educator/s, parents and learners as applicable, before commencing with research.

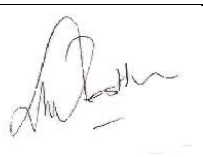
The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institution/s, staff and/or the offices visited for supplying such resources.

The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study <u>may not appear</u> in the research title, report or summary.

On completion of the study the researcher <u>must</u> supply the Director: Education Research and Knowledge Management ,with electronic copies of the Research Report, Thesis, Dissertation as well as a Research Summary (on the GDE Summary template).

The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.

Should the researcher have been involved with research at a school and/or a district/head office level, the Director/s and school/s concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

DECLARATION BY THE RESEARCHER	
I declare that all statements made by myself in this application are true and accurate.	
I accept the conditions associated with the granting of approval to conduct research and undertake to abide by them.	
Signature:	
Date:	26 January 2022
DECLARATION BY SUPERVISOR / PROMOTER / LECTURER	
I declare that: (Name of Researcher):	
is enrolled at the institution / employed by the organisation to which the undersigned is attached.	
The questionnaires / structured interviews / tests meet the criteria of: Educational Accountability Proper Research Design Sensitivity towards Participants Correct Content and Terminology Acceptable Grammar Absence of Non-essential / Superfluous items Ethical clearance	
I will ensure that after successful completion of the degree / project an electronic copy of the Research Report / Thesis / Dissertation and a Research Summary (on the GDE template) will be sent by the researcher to the GDE.	
Surname:	

First Name/s	
Institution / Organisation:	
Faculty / Department (where relevant):	
Telephone:	
Fax:	
E-mail:	
Signature:	
Date:	

ANNEXURE A:

ADDITIONAL INFORMATION FOR GROUP RESEARCH

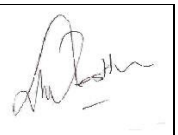
This information must be completed by **every** researcher/ student who will be visiting GDE Institutions for research purposes.

By signing this declaration, the researcher / students accepts the conditions associated with the granting of approval to conduct research in GDE Institutions and undertakes to abide by them.

Supervisor/ Promoter / Lecturer's Surname and Name……

DECLARATION BY RESEARCHERS / STUDENTS:

Surname & Initials	**Name**	**Tel**	**Cell**	**Email address**	**Signature**

Van der Westhuizen	Leonie	N/A	0832632645	leonie@ca2000.co.za	

N.B. This form (and all other relevant documentation where available) may be completed and forwarded electronically to Gumani.mukatuni@gauteng.gov.za; Dineo.Mashigo@gauteng.gov.za The last 2 pages of this document must however have the original signatures of both the researcher and his/her supervisor or promoter. It should be scanned and emailed, posted or hand delivered (in a sealed envelope) to Gumani Mukatuni, 7th flour, 6 Hollard Building, Main and Simmonds Streets, Johannesburg. All enquiries pertaining to the status of research requests can be directed to Gumani Mukatuni on tel. no. 011 355 0775 or Dineo Mashigo on tel. no. 011 355 0336.

APPENDIX G: Language editing certificate

Language Editing Certification

Mariëtte Postma
141 Palm Street
Doringkloof
0157
mariette.postma@gmail.com
084 506 2989

I, Mariette Postma (5804180059081), certify that I have language edited the thesis below:

A model for online professional development of early childhood teachers in South Africa

by

LEONIE MAGDALENA VAN DER WESTHUIZEN, in completion of a PhD degree in Early Childhood Education at UNISA

Dr Mariette Postma

PhD Educational Linguistics

Accredited SATI member

Certification

Fully accredited member of the South African Translators' Institute (SATI)

Membership Number: 1000114

APPENDIX H: Data generation tables

Table i: Codes and categories: Teacher

Teacher as unit of analysis					
Demographics	**Knowledge of CPD**	**Recommendations for Development programmes**	**Programmes attended**	**Benefits of courses**	**Working with teachers from other schools**
Name and Surname Age Qualification Gender Marital Status Home Language Email address Cell number Participant number	No Knowledge Some Knowledge	Art Tantrum behaviour Maths Down Syndrome Psychology Sensory Stimulation Discipline Music Babies	Music Stimulation in classroom Sensory stimulation Cognitive Themes Class looks Recyclables Classroom routine	Empower yourself New challenges Knowledge Classroom new ideas	Good idea Beneficial Interesting New ideas

Table ii: Codes and categories from questions about Face to Face Programmes

Face to Face programmes	
Benefits	**Challenges**
Interaction Communication can ask questions Smaller groups Personal contact Other ideas	Big groups Distractions Time Finance Transport Family Cost Distance

Table iii: Codes and categories: Online Programmes

Online Programmes				
Challenges	**Benefits**	**Assess-ments**	**Skills needed**	**Activities shared**
Internet	Big groups	Portfolio	Computer literate	Music
Communication / Want to ask questions	Own Time	Question-naire	Wifi / Internet	Outside area
Loadshedding	Available later	Quiz	Computer hardware	Classrooms
Concentration	Notes and summaries	Test		Exercises
Cost	Concentration	No assess-ment		
Computer knowledge	At ease			
Experience	Transport			
Computer availability	Time			
Determination	Specific topics			
	No transport needed			
	Support groups			

	Own Home Practical exercises Not so expensive