

12-19-2024

Early Childhood Teachers' Perspectives on Implementing Developmentally Appropriate Practice During Online Instruction

Charmaine Bonds
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Education and Human Sciences

This is to certify that the doctoral study by

Charmaine Bonds

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Terri Edwards, Committee Chairperson, Education Faculty

Dr. Amy White, Committee Member, Education Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2024

Abstract

Early Childhood Teachers' Perspectives on Implementing Developmentally Appropriate
Practice During Online Instruction

by

Charmaine Bonds

MA, Ashford University, 2015

BS, Radford University, 2002

Dissertation Submitted for Fulfillment
of the Requirements for the Degree of
Doctor of Education

Walden University

December 2024

Abstract

Early childhood teachers had to restructure instruction when the COVID-19 pandemic began, and instruction was completed online. The problem was that early childhood teachers faced challenges using developmentally appropriate practice (DAP) in online instruction during the COVID-19 pandemic. The purpose of this basic qualitative study was to explore early childhood teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they needed to improve their use of quality DAP online instruction. The conceptual framework comprised the DAP and the positive technology development theories. The research questions were used to explore pre-K and kindergarten teachers' perspectives on DAP in online instruction and what is needed to improve their use of quality DAP online instruction. Data were collected from individual interviews with 10 pre-K and kindergarten teachers from Georgia, Illinois, California, and Virginia. The results revealed four themes: (a) teachers planned developmentally appropriate fun and engaging individualized learning activities, (b) teachers used collaborative teaching teams, (c) teachers need more professional development in online instruction and technology, and (d) teachers need support with online instruction from parents and administration. Early childhood administrators may use the findings of this study to create and provide quality professional development for early childhood teachers on DAP online instruction for pre-K and kindergarten students. Teachers may use the findings to identify helpful resources, quality DAP online instruction strategies, and technology implementation strategies that enhance the growth and development of a diverse population of pre-k and kindergarten students in the event of a natural disaster or other school-related closure in the future.

Early Childhood Teachers' Perspectives on Implementing Developmentally Appropriate

Practice During Online Instruction

by

Charmaine Bonds

MA, Ashford University, 2015

BS, Radford University, 2002

Dissertation Submitted for Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

December 2024

Dedication

This doctoral study is dedicated to Avarye, my world. Avarye, it is because of you that I work so hard. I want you to know that I love and appreciate the life you give me, even when I am down. To my dad, you are my rock. You have instilled many exceptional principles and morals in my life. You helped keep me grounded and allowed me to grow. And finally, my mom, my heart and soul. Even in your absence, you continue showing me you never left. Because of you, I decided to pursue my doctoral degree, and I am forever grateful. You all are my motivation!

Acknowledgments

I want to take this time to thank my family and friends who continued to support and check on my progress during this entire doctoral journey. You inspired me to keep pushing, and I am forever grateful and blessed to have you in my life. I want to thank Reagan and Dr. KaDee for their help and support during this journey.

I want to thank Dr. Huff, my Walden mentor, for encouraging me throughout this process. I want to thank Dr. White for being a part of my committee and always providing me with honest feedback. Dr. Edwards, I do not know where to begin. I have learned so much from you these last few years. You are a true leader. You inspire, motivate, and provide constructive feedback and guidance to ensure success. Your kind and considerate words inspired me to keep pushing even when I considered giving up.

Furthermore, I am forever blessed to have gotten to know and learn from you. Thank you all. Words cannot tell you all how I am thankful for you!

Table of Contents

List of Tables	v
Chapter 1: Introduction to the Study.....	1
Background.....	2
Problem Statement	5
Purpose of the Study	5
Research Questions	6
Conceptual Framework.....	6
Nature of the Study	8
Definitions.....	9
Assumptions.....	10
Scope and Delimitations	10
Limitations	11
Significance.....	11
Summary	12
Chapter 2: Literature Review	14
Literature Search Strategy.....	15
Conceptual Framework.....	17
DAP	17
Positive Technological Development	21
Literature Review Related to Key Concepts and Variable	25
Evolution of Online Instruction in Early Childhood Education	25
Early Childhood Education and the COVID-19 Pandemic	26

Early Childhood Teachers’ Perspectives on Online Instruction	28
Online Instruction and Students.....	31
Online Learning Programs.....	32
Summary and Conclusions	36
Chapter 3: Research Method.....	38
Research Design and Rationale	38
Role of the Researcher	40
Methodology.....	41
Participant Selection	41
Instrumentation	42
Procedures for Recruitment, Participation, and Data Collection.....	43
Data Analysis Plan.....	46
Trustworthiness.....	48
Ethical Procedures	49
Summary.....	51
Chapter 4: Results.....	52
Setting.....	53
Demographics	53
Data Collection	55
Data Analysis	56
Phase 1: Familiarizing Myself With the Data.....	57
Phase 2: Generating Codes	57
Phase 3: Searching for Themes.....	64

Phase 4: Reviewing the Themes	64
Phase 5: Defining and Labeling Themes	65
Phase 6: Producing the Report.....	66
Results.....	66
RQ1	67
Theme 1: Teachers Planned Developmentally Appropriate Fun and Engaging Individualized Learning Activities	68
Theme 2: Teachers Used Collaborative Teaching Teams	75
RQ2	78
Theme 3: Teachers Need More Professional Development in Online Instruction and Technology	78
Theme 4: Teachers Need Support With Online Instruction From Parents and Administration.....	80
Evidence of Trustworthiness.....	84
Credibility	85
Dependability	85
Transferability.....	86
Confirmability.....	87
Summary.....	87
Chapter 5: Discussion, Conclusions, and Recommendations.....	91
Interpretation of the Findings.....	91
Theme 1: Teachers Plan Developmentally Appropriate Fun and Engaging Individualized Learning Activities	93

Theme 2: Teachers Used Collaborative Teaching Teams	99
Theme 3: Teachers Need More Professional Development in Online Instruction and Technology	101
Theme 4: Teachers Need Support With Online Instruction From Parents and Administration.....	104
Limitations of the Study.....	109
Recommendations.....	110
Implications.....	112
Conclusion	113
References.....	115
Appendix A: Interview Protocol Guide	131
Appendix B: Interview Questions for Participants	133
Appendix C: Coding Table	135

List of Tables

Table 1. Research Participants	54
Table 2. Examples of a Priori Codes	59
Table 3. Examples of Open Codes.....	61
Table 4. Examples of Open Codes and Categories.....	63
Table 5. Categories and Themes for Research Questions.....	66

Chapter 1: Introduction to the Study

Early childhood teachers strived to provide quality developmentally appropriate practices (DAP) through online instruction for pre-K and kindergarten students during the COVID-19 pandemic. Early childhood teachers began implementing alternative forms of instruction due to the COVID-19 pandemic, such as online instruction (Al Ghazali, 2020; Atabey, 2021; Behnamnia et al., 2022). However, many early childhood teachers had little to no training on best teaching practices for online instruction (Buckley-Marudas et al., 2020). This lack of training may have delayed pre-K and kindergarten students' academic growth and developmental milestones (Korkmaz & Toraman, 2020).

Understanding early childhood teachers' perspectives on how DAP was implemented during the online instruction required due to the COVID-19 pandemic is crucial to improving the quality of DAP online instruction for pre-K and kindergarten students. The findings in this study may lead to positive social change by providing early childhood stakeholders with information on early childhood teachers' perspectives of DAP in online instruction and resources needed to improve the use of quality DAP online instruction. Early childhood administrators may use the findings of this study to create and provide quality professional development for early childhood teachers on DAP online instruction for pre-K and kindergarten students.

Chapter 1 includes the study's background, problem statement, research questions, and purpose. The problem statement includes the basis that structures the purpose of this study on DAP in online instruction. I also discuss the nature of the study,

definitions, assumptions, scope, limitations, and significance. Chapter 1 ends with a summary.

Background

Before the COVID-19 pandemic, early childhood teachers taught quality instruction to pre-K and kindergarten students in a classroom environment. However, when instruction transitioned to online learning programs, early childhood teachers were required to use technology (Bers, 2021; McQuirter, 2020). Early childhood teachers were unprepared to implement quality DAP online instruction for various reasons, such as a lack of (a) online instruction experience, (b) a developmentally appropriate online curriculum, (c) quality online learning equipment, and (d) resources (Buckley-Marudas & Rose, 2020; Korkmaz & Toraman, 2020). In part, this was because no federal or state policies require early childhood stakeholders to provide quality DAP online instruction for pre-K and kindergarten students (Bers, 2021; Ford et al., 2021; Grooms & Childs, 2021). The lack of policy and training on quality DAP online instruction for pre-K and kindergarten students resulted in early childhood teachers facing instructional-related challenges due to the COVID-19 pandemic.

Early childhood teachers encountered numerous challenges in implementing technology in their online learning environment. The lack of support from early childhood administrators contributed to the teachers' implementation of quality DAP online instruction (Infurna, 2020). Early childhood teachers' lack of familiarity with technology can lead to teachers displaying bias toward implementing quality DAP online instruction (McQuirter, 2020; Morgan, 2020). Early childhood teachers also faced

challenges from pre-K and kindergarten students. The student-related challenges for early childhood teachers during the COVID-19 pandemic included a lack of technology, internet connection, and engaging activities for pre-K and kindergarten (Ethridge et al., 2022). It is essential to understand how early childhood teachers implemented DAP in online instruction with the challenges of the COVID-19 pandemic and identify what teachers need to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones.

Early childhood teachers can use quality DAP online instruction guidelines and strategies to implement quality DAP online instruction for pre-K and kindergarten students. The National Association for the Education of Young Children (NAEYC; 2020b) organization created the DAP teaching strategies in the 1980s to provide early childhood teachers with a guide for quality DAP instruction, which now includes instruction with technology. Quality DAP online instruction provides pre-K and kindergarten students with individualized, collaborative learning activities that enhance all growth and developmental milestones (Thompson & Stanković-Ramirez, 2021). Positive technology development (PTD) incorporates DAP teaching strategies to provide pre-K and kindergarten students with quality DAP online learning programs (Bers et al., 2019). Numerous online learning programs engage pre-K and kindergarten students in quality DAP online instruction that early childhood administrators can provide for teachers (Govind et al., 2020; Relkin et al., 2020, 2021; Unahalekhaka & Bers, 2021). There is a need for early childhood teachers to provide quality DAP online instruction that supports individualized, collaborative learning activities to enhance growth and

developmental milestones for pre-K and kindergarten students (Thompson & Stanković-Ramirez, 2021).

Early childhood teachers used classrooms to provide quality instruction, but the COVID-19 pandemic caused this method of instruction to change quickly. Early childhood teachers faced numerous challenges when implementing DAP in online instruction during the pandemic. Early childhood stakeholders can use the findings of this study to create and provide professional development opportunities for early childhood teachers on quality DAP online instruction to enhance the growth and development of pre-K and kindergarten students.

This study may provide information that early childhood policymakers and stakeholders can use to assist early childhood teachers in implementing quality DAP online instruction to enhance the growth and development of pre-K and kindergarten students in the event of a future school-related closing or pandemic. Early childhood teachers faced challenges due to the COVID-19 pandemic, including a lack of training, resources, preexisting infrastructure and policies, administrative support, and student-based challenges, leading to a practice gap. Early childhood teachers' lack of training on quality DAP online instruction delayed pre-K and kindergarten students' academic growth and development (Cade et al., 2022; McKenna et al., 2022). Early childhood stakeholders may use the findings of this study to create and provide quality professional development for early childhood teachers on quality DAP online instruction to enhance the growth and development of pre-K and kindergarten students.

Problem Statement

The problem was that early childhood teachers faced challenges using DAP in online instruction during the COVID-19 pandemic, resulting in a gap in developmental instruction. Early childhood teachers were unprepared to transition from in-person to online instruction during the COVID-19 pandemic and faced challenges using DAP in online instruction due to a lack of training, limited resources, planning time, and support in implementing quality DAP online instruction (Ford et al., 2021; Kwatra, 2020; Morgan, 2020; Steed et al., 2022). Early childhood teachers' challenges resulted in delays in pre-K and kindergarten students' learning, growth, and development (Grooms & Childs, 2021). Early childhood teachers' experience with technology determined the engagement or quality of online learning activities, but the lack of quality integration of online instruction continued to hinder pre-K and kindergarten students' growth and development (Su et al., 2022; Thomas et al., 2022). Quality DAP online instruction enhances the growth and development of a diverse population of pre-K and kindergarten students with collaborative, individualized, engaging learning activities (Al Ghazali, 2020; Behnamnia et al., 2022; Ivanova et al., 2020). However, there is limited research regarding quality DAP online instruction and early childhood teachers' perspectives on practices and strategies they used to provide quality DAP online instruction to pre-K and kindergarten students during the COVID-19 pandemic.

Purpose of the Study

The purpose of this basic qualitative study was to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the

COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. Early childhood teachers must be prepared to move from face-to-face to online instruction in the future due to natural disasters, pandemics, and other school-related closures.

Research Questions

Research question (RQ)1: What are pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the pandemic?

RQ2: What do pre-K and kindergarten teachers believe they need to improve their use of DAP in online instruction?

Conceptual Framework

The theories that formed the conceptual framework for this study were DAP and PTD. The DAP theory provides strategies for the best teaching and quality online teaching practices for early childhood teachers (NAEYC, 2020b). DAP provides early childhood teachers with quality teaching strategies encouraging collaborative individualized learning activities to meet pre-K and kindergarten students' growth and developmental milestones (NAEYC, 2020b). Early childhood teachers' knowledge of pre-K and kindergarten students' growth and development is beneficial to implementing quality DAP teaching strategies in their learning environments (Thompson & Stanković-Ramirez, 2021).

Bers' (2021) PTD theory focuses on strategies to improve early childhood teachers' use of quality DAP online instruction to enhance pre-K and kindergarten

students' growth and developmental milestones. The PTD theory explains how pre-K and kindergarten students can receive quality DAP online instruction in a collaborative, engaging, individualized learning environment. The PTD theory incorporates DAP teaching strategies to provide collaborative online learning activities that enhance pre-K and kindergarten students' learning, growth, and development. Pre-K and kindergarten students who receive quality DAP online instruction using the PTD theory interact and communicate with diverse peers, creating quality learning environments where students can confidently express themselves positively and learn respect (Bers, 2021; Strawhacker & Bers, 2018).

These theories developed the RQs, the interview questions, and the interview protocol for the study. Additionally, the DAP and PTD principles were used to collect and analyze the data from interviews with early childhood teachers. The guidelines and principles of DAP and PTD influenced my decision to conduct this basic qualitative study because of the lack of training and support early childhood teachers received on quality DAP online instruction for pre-K and kindergarten students during the COVID-19 pandemic. Together, these theories supported exploring early childhood teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what teachers needed to improve their use of quality DAP online instruction. A more thorough explanation of the conceptual framework is provided in Chapter 2.

Nature of the Study

I used a basic qualitative study to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. Researchers who want to understand how participants interpret their life experiences use a basic qualitative study (Merriam & Tisdell, 2015). A quantitative researcher focuses on collecting numeric data instead of participants' opinions (Lambert, 2012). I determined that a quantitative design did not align with the study because the purpose of this study was to explore early childhood teachers' perspectives. The study sample consisted of 10 United States-certified early childhood teachers with at least 3 years of teaching experience. This basic qualitative study used one-on-one semistructured interviews to collect data. The interview questions were used to explore pre-K and kindergarten teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they believe they need to improve their use of quality DAP online instruction. Semistructured one-on-one interviews were conducted via Zoom. I recruited from the Walden Participant Pool and early childhood social media groups to solicit state-certified pre-K and kindergarten teachers with at least 3 years of teaching experience. I used snowball sampling to seek participants who could provide information about my topic (see Burkholder et al., 2019). Each interview was audio recorded and transcribed. I used a reflective journal to help identify my biases and transcribe my thoughts throughout the study.

I used the conceptual framework of the DAP and PTD theories to identify *a priori* codes. According to Burkholder et al. (2019), priori codes are words or phrases predetermined by the researcher developed from the literature review or framework for the study. A priori codes include (a) an inclusive learning environment, (b) collaborative partnerships, (c) documenting students' growth and development, (d) individualized learning activities, (e) a curriculum to enhance growth and development, and (f) professional development. I reviewed the data, looking for a priori codes, and then used open coding. Open coding is when the researcher identifies data for relevance, whereas axial coding is when the researcher groups open codes together to form categories (Merriam & Tisdell, 2015).

Definitions

Developmentally appropriate practice (DAP): The teaching strategies provide research-based evidence of best teaching practices for growth and development for pre-K and kindergarten students (NAEYC, 2020a). Early childhood teachers who use DAP teaching strategies foster quality collaborative learning environments for all students (NAEYC, 2020a).

Identity construction environments (ICE): These are quality online learning environments that enhance students' growth and developmental milestones using technology (Bers, 2007).

Positive technological development (PTD): Bers created the PTD framework to enhance pre-K and kindergarten students' metacognition skills using quality online instruction (2021).

Online instruction: Online instruction learning models are synchronous, asynchronous, and blended, where teachers and students use technology to connect for learning activities (Picciano, 2017).

Assumptions

Assumptions indicate an aspect of the study a researcher assumes to be true without evidence (Ravitch & Carl, 2016). The first assumption was that early childhood teachers had experience implementing DAP teaching strategies. The second assumption was that early childhood teachers would have experience using various forms of technology in their learning environment. Because I am a novice scholar, I assumed all participants would share their insights willingly and honestly. Another assumption was that my past employment and experiences in education would not negatively affect the study. I would not have professional relationships with study participants and keep a reflective journal to record any bias throughout the research process.

Scope and Delimitations

The scope of this study was early childhood teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic. The state-certified pre-K and kindergarten teachers from the United States had at least 3 years of teaching experience. The DAP and PTD theories were selected for this qualitative study because they focused on the best teaching practices and quality online instruction strategies (see Bers, 2021; NAEYC, 2020a). A researcher's ability to describe the setting and assumptions of the study helps a reader implement the study's findings, which is transferability (Burkholder et al., 2019).

Limitations

I anticipated limitations while conducting this study; the first was displaying biases. As an education coordinator, I have experience with DAP philosophies, strategies, and quality instruction. I only recruited from the Walden Participant Pool and early childhood social media groups to solicit state-certified pre-K and kindergarten teachers from the United States with at least 3 years of teaching experience. A limitation of this study was obtaining enough participants to share their perspectives on DAP and PTD online instruction to attain data saturation. Early childhood teachers dropped out of the study due to time constraints or other obligations. Having details about interviews and providing participants with information such as date, time, and location allowed them to choose if they wanted to accept or decline the offer to participate in my study.

Significance

I explored pre-K and kindergarten teachers' perspectives on how they implemented DAP in online instruction during the COVID-19 pandemic and what they believed they needed to improve their use of quality DAP online instruction. Due to the COVID-19 pandemic, teachers worked hard to implement quality DAP online instruction for pre-K and kindergarten students (Kwatra, 2020). Pre-K and kindergarten students did not receive quality online instruction, causing delays in their growth and development (Atabey, 2021). Some teachers had little to no experience implementing quality online instruction, causing a decrease in students' growth and developmental milestones (Morgan, 2020).

Early childhood stakeholders may use the findings of this study to provide early childhood teachers with professional development training, support, and resources needed to implement quality DAP online instruction in the event schools close due to a natural disaster or other school-related closing. Providing quality DAP online instruction to pre-K and kindergarten students is urgent because emergent foundational skills may be lost (Thomas et al., 2022). There is a lack of research on quality DAP online instruction for pre-K and kindergarten students, early childhood teachers' perspectives on implementing quality DAP online instruction, and PTD (Lauret & Bayram-Jacobs, 2021; Strawhacker & Bers, 2018). Understanding how pre-K and kindergarten teachers view implementing DAP in online instruction may provide administrators with information that helps address this gap in using DAP online instruction. According to the Fred Rogers Center (2012), quality DAP instruction with technology extends pre-K and kindergarten students' growth and developmental milestones by including hands-on, collaborative, and individualized quality learning environments.

Summary

Early childhood teachers are responsible for implementing DAP instruction, but little is understood about how pre-K and kindergarten teachers view implementing DAP in online instruction. The purpose of this basic qualitative research study was to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten student's growth and developmental milestones. The findings in this study may lead to

positive social change by providing early childhood stakeholders with information on implementing quality DAP online instruction to enhance the learning experiences for a diverse population of pre-K and kindergarten students. In Chapter 2, I present the literature review.

Chapter 2: Literature Review

The COVID-19 pandemic instantly changed classroom instruction for early childhood teachers. The problem is that early childhood teachers faced challenges implementing quality DAP online instruction and were unprepared for the transition to online when schools closed during the COVID-19 pandemic (Al Ghazali, 2020; Aslan et al., 2022; Buckley et al., 2020; Crawford et al., 2021; Korkmaz & Toraman, 2020; Thomas et al., 2022). The purpose of this study was to explore pre-K and kindergarten teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they believe they need to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. Early childhood teachers were required to use DAP in online instruction with limited resources and without proper training and support on quality DAP online instruction, causing delays in pre-K and kindergarten students' growth and development (Atabey, 2021; Cade et al., 2022; Ethridge et al., 2022; Infurna, 2020; Lauret & Bayram-Jacobs, 2021; Morgan, 2020). Preparing early childhood teachers to move from face-to-face to online instruction in the future due to natural disasters, pandemics, and other school-related closures is essential to ensuring pre-K and kindergarten students receive quality DAP online instruction in an engaging, collaborative, learner-centered environment. Early childhood policymakers and stakeholders may use this study to assist early childhood teachers in implementing quality DAP online instruction to enhance the growth and development of pre-K and kindergarten students. This chapter includes the

iterative search method conducted for the literature review, the conceptual framework of the study, and a review of the current literature related to the study.

Chapter 2 contains previous literature on DAP, PTD, teachers' perspectives, and quality online instruction for pre-K and kindergarten students. I describe the search strategies used to conduct the literature reviews and explain the conceptual framework to provide the basis for the study using DAP and the PTD online instruction theory. I explain the evolution of online instruction in an early childhood learning environment and how it relates to the gap in quality DAP online instruction for pre-K and kindergarten students. Following the evolution of online instruction, I explore early childhood education and the COVID-19 pandemic, early childhood teachers' perspectives of online instruction, online instruction, and students, ending with online learning programs. Chapter 2 concludes with a summary.

Literature Search Strategy

Google, Google Scholar, and the Walden University Library provided relevant books, reports, peer-reviewed articles, and journals for the literature search. I completed the literature search using Child Care & Early Education Research Connections, Education Source, SAGE journals, Educational Resources Information Center (ERIC), Taylor and Francis Online, EBSCO, Springer e-books, ScienceDirect, and the ProQuest database. I collected primary and secondary sources from books, websites, and journals through search engines and online databases from Walden University Library. I used the same search terms for each database, which included *Bers*, *COVID-19 pandemic*, *coronavirus*, *computers*, *DAP*, *developmentally appropriate practice*, *early childhood*,

early childhood education, early childhood teachers, kindergarten students, kindergarten teachers, National Association for the Education of Young Children, NAEYC, NCOV, online curriculum, online instruction, online learning, online learning programs, online theory for pre-K students, online theory for kindergarten students, pandemic, Papert, positive technological development, PTD, pre-K students, pre-K teachers, programming, technology, quality online instruction, SARS-CoV, and virtual instruction. I searched Google extensively for information on the DAP research-based theory, philosophies, principles, guidelines, and strategies developed by the NAEYC organization. An extensive Google search was conducted on key terms such as Bers, Papert, early childhood teachers' perspective, online instruction for pre-K and kindergarten students, and relevant sources for information about PTD online theory, online learning programs, pre-K and kindergarten student growth, and development. I searched for the relationship between DAP in online instruction, PTD, pre-K and kindergarten student growth and development, and early childhood teachers.

The literature review for this study began by researching the COVID-19 pandemic, DAP, early childhood education, early childhood teachers' perspectives, pre-K students, kindergarten students, and online instruction. This section explains how quality DAP online instruction for early childhood teachers became challenging. Understanding how early childhood teachers viewed implementing DAP in online instruction may provide stakeholders with information on why this topic is relevant and why there is a gap in quality, developmentally appropriate online instruction.

Conceptual Framework

To explore pre-K and kindergarten teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and development, I used the DAP and PTD theories to build the conceptual framework for this study. DAP and PTD include research-based theories, philosophies, principles, guidelines, and strategies that encourage early childhood teachers to provide and implement quality teaching practices and online teaching strategies that enhance pre-K and kindergarten students' growth and development. The DAP and PTD theories were used to develop the RQs, create the interview questions, and was used to analyze data.

DAP

NAEYC (2020a) created DAP around 1985 from years of evidence-based research on pre-K and kindergarten students' developmental milestones, needs, and best teaching practices for early childhood teachers to enhance and support pre-K and kindergarten students' growth and development. The DAP theory contains the following subcategories: core considerations to inform decision making, nine Principles of child development, learning, and implications that inform practice, recommendations for implementing DAP, and six guidelines for developmentally appropriate practice in action: using knowledge of child development and learning in context core considerations to inform decision-making according to NAEYC (2020a). Early childhood teachers must understand the various aspects of student's growth and development to make knowledgeable decisions and nurture students' learning. Early childhood teachers need

three essential considerations to guide teaching practices for pre-K and kindergarten students: understanding students' learning and development, individualizing learning activities, and quality learning environments.

NAEYC's (2020a) guidelines and recommendations for DAP, the child development and learning and implications that inform practice, consist of the following nine principles and provide implications for early childhood education professional practice. NAEYC (2020a) defined the guidelines for Developmentally Appropriate Practice in action: using knowledge of child development and learning in context as a decision-making framework that early childhood learning institutions and teachers can use to provide pre-K and kindergarten students with quality learning environments. The six principles are (a) creating a caring community; (b) engaging in partnerships with families and community connections; (c) observing, recording, and evaluating student's development and learning; (d) teaching to increase each student's development and learning; (e) applying a curriculum that is engaging to achieve goals; and (f) displaying professionalism as an early childhood teacher. A priori codes were created from the six principles, which included (a) an inclusive learning environment, (b) collaborative partnerships, (c) documenting students' growth and development, (d) individualized learning activities, (e) a curriculum to enhance growth and development, and (f) professional development.

Some early childhood teachers are uninformed about the DAP teaching strategies for pre-K and kindergarten students. Cade et al. (2022) discovered that seven of the 16 early childhood teachers interviewed for the study did not know about the DAP teaching

strategies. Likewise, Farley et al. (2018) revealed that early childhood teachers did not know about DAP teaching strategies and noted that the teachers did not understand them. Early childhood learning institutions and early childhood teachers can use the DAP theory to provide quality collaborative learner-centered instruction to pre-K and kindergarten students that supports the growth and developmental milestones of students' social, emotional, physical, and cognitive skills (Ford et al., 2020; NAEYC, 2020a). Early childhood teachers who implement DAP are providing quality learning experiences that intentionally enhance the growth and development of pre-K and kindergarten students (Taylor, 2020).

Pre-K and kindergarten students learn best in an engaging, collaborative, quality learning environment. A quality learning environment is defined as an inclusive, culturally, linguistically, and developmentally appropriate setting where early childhood teachers provide a variety of learning modalities to enhance the growth and development of pre-K and kindergarten students (Bredenkamp, 1992; Ethridge et al., 2022; Infurna, 2020; NAEYC, 2020a; Picciano, 2017; Strawhacker & Bers, 2018). The Fred Rogers Center (2012) article has quality online instruction strategies that early childhood teachers can use to implement technology and interactive media to increase pre-K and kindergarten students' growth and developmental milestones. The DAP principles have been updated twice over the years. In 2020, NAEYC encouraged early childhood teachers to reflect on personal bias toward teaching online instruction with technology and to provide collaborative, engaging, quality individualized online learning experiences for all pre-K and kindergarten students (NAEYC, 2020a; Taylor & Boyer, 2020). DAP is

aligned with the *Professional Standards and Competencies for Early Childhood Educators* and supports quality collaborative, developmentally appropriate online teaching strategies to enhance the learning experience of pre-K and kindergarten students (NAEYC, 2020a; Thompson & Stanković-Ramirez, 2021). According to NAEYC (2020b), the *Professional Standards and Competencies for Early Childhood Education* offers early childhood teachers evidence that supports best teaching practices, instructional strategies, and research on students' growth and developmental milestones.

Early childhood stakeholders have mixed emotions about pre-K and kindergarten students using online instruction. The Fred Rogers Center (2012) article discussed early childhood advocacy and public health organizations' concerns with pre-K and kindergarten students using technology in the learning environment, such as obesity, irregular sleep patterns, behavior, and academic issues. The authors provided evidence contradicting negative concerns about using technology in a pre-K or kindergarten learning environment. NAEYC's (2020a) *Child Development, Learning, and Implications that Inform* ninth practice principle included suggestions for early childhood teachers on using technology appropriately and purposefully to enhance pre-K and kindergarten students' growth, development, learning, and language skills and implementing quality DAP online instruction involved early childhood teachers using various developmentally appropriate learning modalities and understanding pre-K and kindergarten students' growth and developmental milestones (Ethridge et al., 2022; McQuirter, 2020; NAEYC, 2020a; Thompson & Stanković-Ramirez, 2021). Blake et al. (2011) and Rosen and Jaruszewicz (2009) found that understanding DAP teaching

strategies with technology is critical to students' growth and development as technology use rises in the 21st century. Thompson and Stanković-Ramirez (2021) revealed that DAP teaching strategies have evolved over the years, but pre-K and kindergarten students' growth and development varied due to the lack of a quality, safe, and developmentally appropriate learning environment. Early childhood teachers can use the quality DAP online instruction strategies to provide quality, engaging learning environments using technology to all pre-K and kindergarten students. However, early childhood education will continue to see this gap in practice until early childhood teachers receive adequate training on developmentally appropriate quality online instruction curricula, online learning programs, and best teaching practices (Crawford et al., 2021).

Positive Technological Development

In 2007, Bers developed the PTD theory for quality developmentally appropriate online instruction for students, which was created on the principles and philosophies of Papert and DAP (Bers, 2017, 2018; Relkin et al., 2020, 2021; Vaala, 2012). The PTD online theory incorporated technology in quality collaborative individualized learning environments utilizing the teaching and learning principles derived from Papert's constructivism Turtle LOGO computer-based programming theory (Bers, 2007, 2010b, 2017; Strawhacker & Bers, 2018). Papert (1980) discussed how using a computer to teach a child is called computer-aided instruction, but his vision was for students to use programming to build a program. Papert used Piaget's ideology of students being builders of their intelligence to develop programming. Papert (1980) said, "Programming a computer means nothing more or less than communicating to it in a language that it and

the human use can both understand” (p. 6). Papert believed that technology had three roles in learning a neutral, liberator, and incubator, and when used as a tool, enhances the learning experiences of pre-K and kindergarten students (Bers, 2017; Strawhacker & Bers, 2018; Papert, 1980; Strawhacker et al., 2018). According to Bers’s (2017) study, the neutral role discusses that the computer determines some ideas. The liberator refers to ideas that existed before the computer, but the computer enlightens ideas and becomes more robust and available to a diverse population of students. The last role of computers is incubators, which refers to the information that would not be available without technology (Bers, 2017, p. 11). Each role allows early childhood teachers to implement technology to encourage pre-K and kindergarten students to become creative and creators of their learning in a technology-enriched environment (Bers, 2017; Macrides et al., 2021; Papert, 1980; Strawhacker & Bers, 2018; Worker, 2014). The Turtle LOGO program was designed to provide a collaborative, inclusive learning environment for students using technology and programming (LOGO Foundation, 2015; Papert, 1980).

The PTD theory focuses on specific aspects of students' learning. The philosophy of the PTD theory is to understand how students can use technology to enhance developmental milestones and embrace creativity while using programming (Bers, 2007, 2010ab). The PTD theory’s principles are content creation, creativity, communication, collaboration, conduct, and community building. According to Bers’s (2007) study, content creation encourages students to develop competence when using technology. Creativity promotes students’ self-confidence when using technology to create individual projects. Students develop communication skills to demonstrate sympathy and empathy

for peers and adults. Pre-K and kindergarten students learn to conduct themselves around peers and adults, developing respect and honesty. Pre-K and kindergarten students experience community-building activities, contributing to students becoming productive members of society. Identity construction environments (ICE) are online learning environments developed by Bers and the PTD theory to enhance students' growth and developmental milestones using technology (Bers, 2007, 2017, 2018; Bers et al., 2018; Strawhacker & Bers, 2018). PTD principles allowed early childhood teachers to use quality DAP online learning programs such as KIBO, Makerspace, and Scratch Jr. to engage pre-K and kindergarten students in activities that enhance developmental milestones and provide a technology-enriched environment (Bers, 2021; Bers et al., 2019).

Online learning programs grounded in PTD principles support quality instruction using technology. Scratch Jr is an app that allows kindergarten students to use programming to enhance their growth and development (Bers & Sullivan, 2019). KIBO robotics used coding and programming learning opportunities to encourage pre-K and kindergarten students to communicate and collaborate (Bers et al., 2019). KIBO robotics promoted problem-solving and critical-thinking skills in pre-K and kindergarten students (Bers, 2021). Early childhood teachers who used Makerspace provided pre-K and kindergarten students with individualized learning opportunities that enhanced social and critical thinking skills (Giusti & Bombieri, 2020). The evidence provided by these researchers supported using PTD for this study because these online learning programs

are embedded in PTD principles and enhance the growth and development of pre-K and kindergarten students.

The PTD theory aligned with DAP teaching practices. The principles of PTD provided early childhood teachers with quality DAP online instruction strategies that encouraged a collaborative individualized learning environment where pre-K and kindergarten students connected and demonstrated confidence and compassion (Bers, 2018; Bers et al., 2018; Bers & Sullivan, 2019; Vaala, 2012; Worker, 2014). PTD included engaging, collaborative, individualized, quality online instruction that helped pre-K and kindergarten students enhance metacognition, intrapersonal, interpersonal, and social skills (Bers, 2018; Bers et al., 2019; Strawhacker & Bers, 2018; Worker, 2014). Collaborative and individualized online instruction encouraged pre-K and kindergarten students to interact and communicate with a diverse population, creating inclusive learning environments where students confidently expressed themselves positively and learned respect (Albo-Canals et al., 2018; Aldemir & Kermani, 2016; Bers, 2007, 2017; Macrides et al., 2021; Strawhacker & Bers, 2018). The PTD online theory contains principles and strategies encouraging early childhood teachers to incorporate quality, developmentally appropriate online instruction for pre-K and kindergarten students. Bers's (2007) research was conducted on older students using the PTD theory; however, there is little research on using the PTD theory for pre-K and kindergarten students.

Literature Review Related to Key Concepts and Variable

Evolution of Online Instruction in Early Childhood Education

The evolution of online instruction in early childhood education began long before the COVID-19 pandemic. The discussion of early childhood teachers using technology with instruction started around 1960 with Papert's research, which focused on creating engaging, collaborative, individualized, developmentally appropriate learning activities for students (Bers, 2007, 2017, 2018; Picciano, 2017). Papert (1980) explained his research of 20 years ideology of programming, which he described as students using computers to communicate to understand each other and how quality instruction with technology enhances the students' critical thinking, problem-solving, and language skills using engaging, collaborative, and individualized learning activities. Papert's computer-based program Turtle LOGO centers on Piaget's learning model of students being responsible for their learning (Bers, 2010abc; Papert, 1980; Picciano, 2017; Worker, 2014). Papert used geometry and touch sensor turtles to assess, track, and enhance students' developmental milestones by creating an engaging, collaborative, and individualized learning plan (LOGO Foundation, 2015). The Turtle LOGO program combined the purpose of learning and physical models with mathematical concepts to enhance students' growth and learning. Turtle LOGO and Terrapin Software provided additional technology-based learning programs to enhance the developmental milestones of students (LOGO Foundation, 2015; Papert, 1980).

In 1986, the NAEYC organization created the DAP teaching strategies. The teaching strategies suggested that early childhood teachers provide responsible and

intentional online learning activities to enhance pre-K and kindergarten students' growth and development (Charlesworth, 1998; Fred Rogers Center, 2012; NAECY, 2020a). DAP teaching strategies can be modified to meet the needs of a diverse population of pre-K and kindergarten students (Taylor & Boyer, 2020). Online instruction theories, such as community of inquiry, connectivism, and online collaborative learning (Apostolidou, 2022), would have to be modified to become developmentally appropriate for pre-K and kindergarten students. Online learning programs such as CRISPEE, Electric Blocks, KIBO Makerspace Scratch Jr, and Science Technology Engineering and Math (STEM) provide an online curriculum or learning program that can enhance pre-K and kindergarten students' metacognition, social, and language skills pandemic (Beers, 2021; Bers & Sullivan, 2019; Bers et al., 2018; Govind et al., 2020; Hardiyanti et al., 2022; Ivanova et al., 2020; Moomaw, 2010; Pinto & Fernandes, 2020; Strawhacker et al., 2020; Unahalekhaka & Bers, 2021, Wyeth & Purchase, 2002). However, none of these online learning programs were implemented in early childhood learning institutions before COVID-19.

Early Childhood Education and the COVID-19 Pandemic

Early childhood education changed when the COVID-19 pandemic started. A few early learning institutions' classrooms closed when the COVID-19 pandemic forced school closing mandates in March 2020, which transitioned early childhood teachers, pre-K, and kindergarten students to online instruction for the first time (Aslan et al., 2022; Beers, 2021; Buckley-Marudas & Rose, 2020; Crawford et al., 2021; Ford et al., 2021; Jalongo, 2021; Steed et al., 2022; Su et al., 2022). Even with DAP teaching strategies and

PTD providing evidence of the benefits of using technology in the classroom of pre-K and kindergarten students, few early childhood learning institutions provided quality DAP online instruction to pre-K and kindergarten students (Bers, 2021; Korkmaz & Toraman, 2020; Lauret & Bayram-Jacobs, 2021). There are no federal or state policies or mandates that require early childhood learning institutions to provide quality DAP online instruction to pre-K and kindergarten students (Parette et al., 2010; Bers, 2018, 2021; Grooms & Childs, 2021; Taylor & Boyer, 2020). Early childhood administrators created policies for online instruction based on state and federally required health and safety guidelines (Ford et al., 2021). Early childhood learning institutions did not have adequate policies, resources, or materials to encourage quality DAP online instruction from early childhood teachers due to a lack of funding, regulations, and technological devices (Hardiyanti et al., 2022; Korkmaz & Toraman, 2020; McKenna et al., 2022; Steed et al., 2022).

Changing stakeholder viewpoints on online instruction for pre-K and kindergarten students may be challenging. According to Behnamnia et al. (2022), the educational world has not yet agreed upon using technology for pre-K students; there is still some resistance to integrating technology into early childhood education. Pre-K and kindergarten students learn best in quality developmentally appropriate learning environments; however, early childhood teachers faced challenges providing quality DAP online instruction during the COVID-19 pandemic (Ethridge et al., 2022; Grooms & Childs, 2021; Infurna, 2021). Ethridge et al. (2022) conducted a study with 76 early childhood teachers that discussed their challenges and successes of online learning.

Grooms and Childs (2021) revealed that stakeholders need to plan and create online instruction learning environments to enhance the growth and development of students. Professional development opportunities on best teaching practices are imperative to ensure that early childhood teachers provide quality learning experiences for pre-K and kindergarten students during online instruction (Infurna, 2021).

Early Childhood Teachers' Perspectives on Online Instruction

Early childhood teachers shared their perspectives on online instruction. Previously, early childhood teachers had provided pre-K and kindergarten students with quality, developmentally appropriate instruction in engaging, collaborative, learner-centered classroom environments that stimulated students' interest in learning, but due to the COVID-19 pandemic, this changed quickly (Aslan et al., 2022; Atabey, 2021; Buckley-Marudas & Rose, 2020; Grooms & Childs, 2021). Teachers used social media platforms such as Twitter, Facebook, and LinkedIn to network and collaborate with other teachers to create online instructional ideas for pre-K and kindergarten students (Fan & Elliot, 2022). Pre-K and kindergarten teachers collaborated with other teachers using YouTube, Reddit, and Twitter to support students learning during the COVID-19 pandemic (Varela & Fedynich, 2021). When teachers collaborate, they learn about different online learning tools and form supportive partnerships with other teachers (Zecca, 2021). A virtual professional community allows teachers to collaborate with other teachers to build their online instruction knowledge and expertise (Summers, 2020). Teacher collaboration supports student's growth and development.

Teachers collaborating with other teachers while using technology with students benefit students' learning (Varela & Fedynich, 2021). Co-teaching is imperative when working with dual language learners and special needs students (DeRosia et al., 2021). Administrators and teachers can collaborate to create developmentally appropriate learning activities and strategies for students learning (Saunders-Smith et al., 2022). When teachers provide students with online instruction, they need time to collaborate with other teachers (Summers, 2020). Some programs support teacher collaboration.

The teacher inquiry program is a tool that can be used to encourage teacher collaboration. Wagner (2022) stated, "Teacher inquiry brings groups of teachers together to participate in collaborative inquiry about issues of practice" (p. 135). The GoSTEAM program allows teachers to collaborate and support pre-K and kindergarten growth and development (Ro et al., 2021). When collaborating with other teachers, teachers succeed with online instruction (Varela & Fedynich, 2021). However, teachers did face challenges with online instruction.

Early childhood teachers were unprepared to transition from in-person to online instruction during the COVID-19 pandemic (Beers, 2021; Ford et al., 2021; Korkmaz & Toraman, 2020; Su et al., 2022). Early childhood teachers' lack of understanding of DAP strategies affected quality instruction for a diverse population of students (Farley et al., 2018; Ford et al., 2021; Su et al., 2022). Early childhood teachers did not receive support from administrators during the transition to online instruction; therefore, the teachers could not support the growth and development of pre-K and kindergarten students

(Ethridge et al., 2022; Infurna, 2020; McKenna et al., 2022). Early childhood teachers also encountered other challenges transitioning from in-person to online instruction.

Early childhood teachers faced other challenges during this transition to online instruction. Early childhood teachers lacked training and professional development on quality DAP online instruction, online curricula, policies, and procedures (Al Ghazali, 2021; Infurna, 2021; Kwatra, 2021; Lauret & Bayram-Jacobs, 2021; McQuirter, 2020; Morgan, 2020). Early childhood teachers also dealt with pre-K and kindergarten students not having a reliable internet connection, planning time, and adult supervision, which hindered student engagement during online learning instruction (Ethridge et al., 2022; Kerker et al., 2023; Morgan, 2020; Strawhacker et al., 2020; Wan et al., 2020). It was hard for early childhood teachers to encourage parent involvement during online instruction because face-to-face interaction was limited (Chen & Rivera-Vernazza, 2023). Numerous teachers displayed a negative attitude or bias toward implementing online instruction because of their lack of experience with using technology in the classroom (Aldemir & Kermani, 2017; Ford et al., 2021; Gözüüm et al., 2022; McQuirter, 2020; Thompson & Stanković-Ramirez, 2021; Wan et al., 2020). Teachers believe pre-K and kindergarten students were not developmentally or socially prepared for the next grade level due to the COVID-19 pandemic (Murphy et al., 2024). These challenges in providing quality DAP online instruction affected pre-K and kindergarten students' growth and development.

Online Instruction and Students

Pre-K and kindergarten students transitioned to online instruction due to the COVID-19 pandemic. The COVID-19 pandemic revealed a gap in practice because many early childhood teachers were not trained in quality DAP online instruction for pre-K and kindergarten students (Aslan et al., 2022; Jalongo, 2021; Lauret & Bayram-Jacobs, 2021; Strawhacker et al., 2020). The lack of structured, quality DAP online instruction caused delays in the growth and development of pre-K and kindergarten students (Grooms & Child, 2021; Kerker et al., 2023; Kwatra, 2020; McQuirter, 2020). The lack of adult supervision hindered pre-K and kindergarten students' interactions during online instruction (Ethridge et al., 2022; Ford et al., 2021). Thomas et al. (2022) reported low participation from students and scheduling conflicts with parents as concerns about using traditional assessments to assess the growth and development of students during the COVID-19 pandemic. Parents feel that online instruction is too hard for their students and takes too much time (Chen & Rivera-Vernazza, 2023). Parent and teacher collaboration is essential for students' success in online instruction (Beatriks et al., 2024). When students collaborate in online learning activities and apply skills in the real world, they engage in learning experiences that enhance comprehension (Adeniyi et al., 2024). Effective partnerships between schools, homes, and the community are essential to students' online learning success (Rachael, 2024). Quality professional development or training in DAP online instruction and having access to technology that involves pre-K and kindergarten students in engaging, collaborative, individualized, learner-centered activities are beneficial for early childhood teachers to successfully implement quality

DAP online instruction (Al Ghazali, 2021; Atabey, 2021; Bers, 2007; Buckley-Marudas & Rose, 2020; Strawhacker et al., 2020; Wan et al., 2020).

Early childhood teachers who use technology daily with pre-K and kindergarten students transitioned well to online instruction during the COVID-19 pandemic (Beers, 2021; Grooms & Child, 2021). The lack of early childhood stakeholders implementing quality DAP online instruction was due to local or state legislation not requiring early childhood learning institutions to use a quality DAP online curriculum or learning program (Ford et al., 2021; Grooms & Childs, 2021). Papert's (1980) research in 1960 began the conversation on early childhood teachers using technology with instruction, and since then, the investigation of quality DAP online instruction has continued to evolve. Teachers and parents must work together for students to be successful with online learning (Nwangwu et al., 2024). Online learning allows students to develop critical and evaluative skills (Falloon, 2024). The COVID-19 pandemic and online instruction enormously impacted students' mental health and social-emotional development (Murphy et al., 2024). A few online learning programs have been developed to enhance pre-K and kindergarten students' growth and developmental milestones (Behnamnia et al., 2022; Giusti & Bombieri, 2020; NAEYC, 2020a).

Online Learning Programs

Numerous online learning programs enhance the growth and development of pre-K and kindergarten students. The Turtle LOGO model was used to create Zora and Scratch Jr. Zora's program design promoted creativity and language using real-life experiences with students (Bers et al., 2018). Scratch Jr. is a programming app that

encourages pre-K and kindergarten students to build language and vocabulary using coding in engaging games and stories (Unahalekhaka & Bers, 2021). The CRISPEE tool, Electronic Blocks, KIBO Makerspace, STEM, and Scratch Jr. followed the same ideology as Turtle LOGO, which encourages collaborative, engaging, online learning activities using robotics and technology with a diverse population of pre-K and kindergarten students (Albo-Canals et al., 2018; Bers, 2017; Bers et al., 2019; Strawhacker & Bers, 2018; Strawhacker et al., 2018). The CRISPEE tool aligns with PTD and DAP to enhance pre-K and kindergarten students' growth and development through tangible technology (Strawhacker et al., 2020). Electronic Blocks used robots to create visual, auditory, and physical actions for pre-K and kindergarten students (Wyeth & Purchase, 2002). The Tangible K robotics or KIBO uses programming to encourage pre-K and kindergarten students to build robots, which enhances students' analytical and scientific thinking skills (Bers, 2010c). Makerspace is an inclusive, collaborative online learning environment where early childhood teachers use digital technology daily to enhance pre-K and kindergarten students' growth and developmental milestones (Giusti & Bombieri, 2020; Strawhacker & Bers, 2018). Early childhood learning institutions that offered a STEM curriculum or used the CRISPEE tool provided pre-K and kindergarten students with collaborative, engaging, quality DAP technology-enriched learning environments (Aldemir & Kermani, 2017; Strawhacker et al., 2020). STEM is an integrated learning approach that teaches science, technology, engineering, and mathematics to pre-K and kindergarten students to enhance students' creativity, problem-solving, communication, and collaboration skills (Wan et al., 2022). These online

learning programs enhance the growth and development of pre-K and kindergarten students.

There are online assessments and additional online learning strategies that early childhood stakeholders can use to monitor the development of pre-K and kindergarten students. Digital portfolios are ongoing DAP online assessments that early childhood teachers use to plan and implement developmental goals and objectives based on pre-K and kindergarten students' developmental milestones (Hardiyanti et al., 2022). According to Morgan (2020), the International Society for Technology in Education (ISTE) suggested 14 learning principles for teachers and students to use technology, and it identifies strategies to ensure equity, communicate expectations, and provide student-centered learning and free emotional online resources for students and teachers. The ISTE (2023a) principles for students were developed to encourage self-esteem and individualized learning opportunities, while the teacher standards allow students to develop a sense of self. Morgan explained the ISTE student standards in the following ways: (a) The empowered learner inspires students to actively demonstrate their ability to use and choose technologies to attain learning objectives, (b) the digital citizen focuses on enhancing student awareness of the responsibilities and privileges of partaking in the digital world, (c) the knowledge constructor builds on the information learned during activities, (d) the innovative designer stimulates creativity, (e) the computational thinker explores and finds resolutions to problems using various digital devices, (f) the creative communicator lets students create unique work by combining digital resources and creating new content by modifying it for their anticipated audiences, and (g) the global

collaborator focuses on increasing students' perspectives (p. 138). Morgan (2020) described the ISTE teacher standards in the following ways: (a) The learner highlights the continued development of technology skills, (b) the leader looks for opportunities that form and improve teaching and learning in the learning environment, (c) the citizen creates opportunities for students to make socially responsible contributions, (d) the collaborator spends time collaborating with students and teachers, (e) the designer inspires teachers to create learner-centered activities that replicate the student's inconsistency, (f) the facilitator creates a student-centered learning environment where students take ownership of their education, and (g) the analyst uses data to support students using technology and creates formative and summative assessments to evaluate students' growth and development. Professional development opportunities can support early childhood teachers in DAP online instruction.

There are professional development opportunities for quality DAP online instruction that early childhood stakeholders can use for teachers. The Research and Instructional Technology Services (2023) NYU Shanghai Digital Teaching Toolkit offers quality DAP online learning digital tools and approaches for early childhood administrators and teachers to implement to enhance pre-K and kindergarten students' online learning environment. The authors provided evidence that supported using these online learning programs to promote inclusive quality DAP online instruction for a diverse population of pre-K and kindergarten students. DAP, ISTE, the NYU Shanghai Digital Teaching Toolkit, and PTD provided standards and guidelines to assist early childhood administrators and teachers in implementing quality DAP online instruction for

pre-K and kindergarten students (Bers, 2021; Buckley-Marudas & Rose, 2020; ITSE, 2023a, 2023b; NAEYC, 2020a; Macrides et al., 2021; Morgan, 2020; Strawhacker et al., 2020). These professional development opportunities supported quality online instruction for early childhood teachers.

Summary and Conclusions

In this review of the literature, I concentrated on the topics of the COVID-19 pandemic, early childhood education, DAP online theory for pre-K and kindergarten students, technology, and online instruction, which revealed the following themes: evolution of online instruction for early childhood education, early childhood education and the COVID-19 pandemic, early childhood teachers' perspectives of online instruction, online instruction and students, and online learning programs. The evolution of online instruction showed how the gap in quality DAP online instruction began and how the issue continued for early childhood teachers. Online instruction is implemented predominately in the classroom with kindergarten and older students but not in the learning environment of pre-K students (Wan et al., 2020). Pre-K and kindergarten teachers lack sufficient training in quality online instruction and the use of technology in the classroom (Behnamnia et al., 2022).

Multiple authors have supported using DAP and PTD as best practices for early childhood teachers to create quality online instruction for pre-K and kindergarten students (Bers, 2007, 2017; Strawhacker et al., 2020; Thompson & Stanković-Ramirez, 2021). Early childhood teachers' online instruction approaches influenced the progress of pre-K and kindergarten students' growth and developmental milestones (Atabey, 2021;

Beers, 2021). Early childhood teachers' lack of experience or bias toward online instruction and using technology decreased the quality of online instruction that pre-K and kindergarten students received (McQuirter, 2020).

Understanding how early childhood teachers view implementing DAP online instruction and what they believe they need to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and development may provide stakeholders with information that could be used to address this gap in quality DAP online instruction. In this study, I conducted one-on-one semistructured interviews with pre-K and kindergarten teachers to gather their perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. Chapter 3 includes a complete description of how the gap in the literature was investigated using a basic qualitative research design to develop a deeper understanding of quality DAP online instruction approaches by interviewing United States-certified pre-K and kindergarten teachers who had been teaching for at least 3 years before the onset of the COVID-19 pandemic.

Chapter 3: Research Method

The purpose of this basic qualitative study was to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and development. Early childhood teachers must be prepared to move from face-to-face to online instruction in the future in the event of natural disasters, pandemics, and other school-related closures.

Research Design and Rationale

The following questions guided this basic qualitative research study:

RQ1: What are pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the pandemic?

RQ2: What do pre-K and kindergarten teachers believe they need to improve their use of DAP in online instruction?

To address these RQs, I used a basic qualitative research design to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction using an interview format. A basic qualitative research design was appropriate for this study because I explored early childhood teachers' perspectives and approaches (see Merriam & Tisdell, 2015). By interviewing current pre-K and kindergarten teachers, I learned about DAP online instructional strategies that enhanced pre-K and kindergarten students' growth and

developmental milestones. Interviewing is the data collection technique used in a qualitative study, which provides evidence from the informed participants of the study's phenomenon (Burkholder et al., 2019; Lambert, 2012). A qualitative approach was the most applicable method for this study because it allowed me to gather evidence and explore pre-K and kindergarten teachers' perspectives on DAP online instruction. Exploring teachers' perspectives would not be accomplished through a quantitative approach because I was not seeking a statistical explanation of participants' views. A quantitative design lacked the detailed perspectives that I gathered using interviews.

Considering that early childhood teachers faced challenges using DAP in online instruction during the COVID-19 pandemic, which led to a gap in practice, I contemplated using other research designs before deciding on a basic qualitative design. One design I considered is phenomenology, where an author seeks to understand the experiences of participants who share a common experience (see Burkholder et al., 2019). The phenomenological design requires in-depth individual interviewing to ensure validity. I used individual interviewing during data collection; however, a phenomenological method would take longer to achieve validity. A case study is another method that describes an investigation of a group, event, or system (Lambert, 2012). The last method I considered was grounded theory. The grounded theory research design highlights findings with explanations and confirmation from real-world situations (Merriam, 2002). The grounded theory would not work for my study because my interview questions did not change during the process, and I am not adding to a theory.

After evaluating the different designs and theories, I decided on a basic qualitative study. A basic qualitative study can be used to uncover the approaches, methods, and teaching practices of quality teachers. Therefore, a basic qualitative study using one-on-one semistructured interviews explored the perspectives of pre-K and kindergarten teachers on implementing DAP in online instruction to enhance pre-K and kindergarten students' growth and developmental milestones.

Role of the Researcher

As the researcher, I am accountable for all aspects of this study. Because I was the researcher for this study, I observed the participants, gathered data from semistructured interviews, and then analyzed the data into codes (see Devetak et al., 2010). I have been an education coordinator for Head Start and have been working with families since 2001. During my years in education, I have been a substitute, assistant, teacher, and lead teacher. As an education coordinator, I have been a coach/mentor to teachers, a partnership coordinator, and an independent contractor for quality interactions. These experiences ignited my interest in creating this study.

I realized that some biases might have formed through my experiences as an early childhood education coordinator. Authors are a significant part of the qualitative research design and must describe relevant biases, assumptions, opportunities, and skills when compiling research (Burkholder et al., 2019). Biases can influence research; however, reflexive or transparent authors reduce bias during a study (Burkholder et al., 2019). I showed respect and acknowledged my educational assumptions to minimize bias. I minimized discriminatory language by transcribing the participants' responses verbatim. I

consciously neglected my experiences as an education coordinator and explored the study's participants' perspectives thoroughly. I used a journal to constantly reflect on personal biases, theoretical preferences, study location, participant selection, personal experiences, relationships with participants, and the data collection and analysis process (Burkholder et al., 2019; Merriam & Tisdell, 2015).

Methodology

Participant Selection

I began collecting data once I received approval from Walden's University IRB. The IRB approval number was 06-27-23-1030992. Participants selected for this basic qualitative study were 10 state-certified pre-K and kindergarten teachers who taught online instruction in the United States during the COVID-19 pandemic and have at least 3 years of teaching experience. To better identify teachers' perspectives, I conducted one-on-one semistructured interviews with current pre-K and kindergarten teachers who taught and continue to teach online instruction. Participants were recruited from the Walden University Participant Pool and early childhood social media groups. Participants reviewed the invitation, which included a study description and the participation criteria. I asked the participants if they met the study criteria by asking the background questions from the interview protocol guide (see Appendix A). Participants who agreed to participate in the study received a consent form.

I used snowball sampling to invite 10 pre-K and kindergarten teachers. Opportunistic sampling was used to obtain more participants if necessary. Sampling is when authors identify participants who can provide information for the study, and

snowball sampling aids in accomplishing this goal (Burkholder et al., 2019). The criteria for participant selection for this study were that participants (a) taught pre-K and kindergarten students online instruction in the United States during the COVID-19 pandemic, (b) were state-certified, and (c) had 3 years of teaching experience. Using snowball and opportunistic sampling allowed me to ask participants for other early childhood teachers and capitalize on those referrals (see Burkholder et al., 2019). Recruiting 10 pre-K and kindergarten teachers who met these criteria for participation ensured I reached saturation during the data analysis process. The relationship between saturation and sample size occurs when data becomes repetitive and no new themes emerge (Weller et al., 2018). Each interview was audio recorded and transcribed. Once I interviewed the participants, I used my reflective journal to help identify my biases and continued transcribing my thoughts throughout the data collection.

Instrumentation

The researcher is the main instrument in a qualitative study (Merriam & Tisdell, 2015), which is the situation for this doctoral study. In this basic qualitative study, I conducted one-on-one semistructured interviews with each pre-K and kindergarten teacher via Zoom. I posted an invitation to participate on the Walden University Participant Pool and early childhood social media sites; those who contacted me received an informed consent form via email. I designed the interview questions using the related literature and conceptual framework to answer the RQs (see Appendix B). Interview Questions 1–5 were used to answer RQ1, while Interview Questions 6–10 were used to answer RQ2. I created follow-up questions to use throughout the interview process. The

interview protocol guide was used as the instrument to collect data. This interview protocol guide (see Appendix A) was used to gather demographic information, document minor details, tell the participants about the study expectations, and list the interview questions. Interviewing allows the researcher to explore the experiences and opinions of participants in the study to understand a different point of view (Rubin & Rubin, 2011). The primary data came from audio-recorded interview responses conducted via Zoom. Audio recording and transcribing the interviews ensure the researcher quotes participants' responses correctly (Burkholder et al., 2019). To maintain trustworthiness, I asked each participant the interview questions in the same sequence. If the responses to the questions were brief or general, I asked follow-up questions and had the participants expand or give further details in their responses. To address content validity, I asked two nonparticipating early childhood teachers to review the interview questions for clarity to ensure that the design of the questions would answer each RQ. I also conducted a mock interview with one of the early childhood teachers who fit the study criteria to become familiar with the design of the interview protocol and audio recording platforms.

Procedures for Recruitment, Participation, and Data Collection

This study consisted of 10 pre-K and kindergarten teachers. I recruited the participants based on their experience teaching online instruction to pre-K and kindergarten students in the United States during the COVID-19 pandemic. Participants were recruited from the Walden University Participant Pool and early childhood social media sites. Snowball sampling was used to attain participants. Participants provided their perspectives and came from various places in the United States.

Recruitment

The participants were recruited once I posted an invitation to the Walden University Participant Pool and early childhood social media sites. The invitation included a description of the study and the participation requirements. Participants who agreed to participate in the study received a consent form. Data were collected from one-on-one semistructured interviews via Zoom. All interviews were audio recorded, and I attempted to conduct them after 5:00 p.m. in the participant's time zone; each interview was completed within 30 to 60 minutes.

Participation

After approval from the Walden University Institutional Review Board (IRB), I posted the invitation for the study to the Walden Participant Pool and early childhood social media sites. I asked the participants if they met the study criteria by asking the background questions from the interview protocol guide (see Appendix A). Potential participants who met the criteria contacted me and received a consent form via email. Pre-K and kindergarten teachers who agreed to participate in the study received a thank-you letter and a scheduling invitation to select a convenient time. I used the interview protocol to conduct one-on-one semistructured interviews.

Data Collection

Qualitative interviews are a research method that allows a researcher to examine a topic and explain gaps in practice (Rubin & Rubin, 2011). One-on-one semistructured interviews were the data collection method I used for this study. One-on-one semistructured interviews are dialogs of the interview questions and probes to gather

information on the study that will answer the RQs (Burkholder et al., 2019). Interviews allow a researcher to hear the experiences and views of participants in the study to explore their perspectives (Rubin & Rubin, 2011).

A reminder email was sent to participants about the interview. Before each scheduled interview, I reviewed the interview protocol and ensured the audio recording platform was set up and working correctly. One-on-one semistructured interviews were conducted via Zoom on the scheduled date and time. Before the interviews, I introduced myself to the participants. I informed participants of their right to withdraw from the study at any time, and before the interview began, I asked them if they had any questions.

To answer the RQs of this study, I conducted 10 interviews with pre-K and kindergarten teachers who taught online instruction to pre-K and kindergarten students in the United States. The early childhood teachers' perspectives of DAP in online instruction may provide information that enhances the growth and development of pre-K and kindergarten students. Each participant was asked the interview questions in the same order. I maintained honesty and respect by being open to answering any questions the participants may have during the interview process. All participants were interviewed for 30 to 60 minutes, and I documented my thoughts in my reflective journal.

When the interview ended, I debriefed all participants and reminded them that all interview responses were confidential. I asked the participants if there were any additional questions regarding the interview process; if there were no questions, I thanked them for their time and contribution. I sent the participants a two-page summary of the findings and asked them to provide feedback and ask questions; this is how I member-

checked. I used member checking for trustworthiness and reliability. Member checks allow the participants to provide feedback on the data collected during their interview to ensure responses were interpreted correctly (Merriam & Tisdell, 2015). The data collection process took 5 months.

Data Analysis Plan

Data analysis included gathering, interpreting, developing conclusions, and determining significance from interviews, revealing concepts and themes that a researcher can use to gain a deeper understanding of a topic (Burkholder et al., 2019). I examined the data closely to identify common concepts, themes, and patterns of repetition. Once I completed the interviews, I transcribed them into written text using Zoom. I reviewed the transcripts to confirm the accuracy and analyzed the participants' responses line by line. A word-by-word explanation of the participants' responses assisted with data analysis. In qualitative research, data analysis ensures accurate study results (Spaulding, 2014).

I used inductive and deductive reasoning during the data analysis process. I began the data analysis after the participants' audio responses were downloaded from Zoom into written transcripts. I used deductive reasoning by reviewing *a priori* codes created from the framework, RQs, and purpose (see Saldaña, 2016). A priori codes for this study included (a) inclusive learning environment, (b) collaborative partnerships, (c) documenting student's growth and development, (d) individualized learning activities, (e) curriculum to enhance students' growth and development, and (f) professional development. I added the codes as I examined the data to identify open codes.

In open coding, I examined the data line-by-line, looking to create keywords or phrases (see Saldaña, 2016). I examined, identified, classified, and compared codes (see Burkholder et al., 2019). I manually used different color highlighters to differentiate between the open codes. In the upcoming rounds of coding, I focused on the RQs until I coded all of the data (Merriam & Tisdell, 2015). I used open codes to help organize my data into concepts by analyzing the written text (see Saldaña, 2016).

Once I created the open codes, I used axial coding to group similarly coded data from open codes and relabel them into categories (see Saldaña, 2016). It is the process of grouping open codes, focusing on interpreting the data into categories (see Merriam & Tisdell, 2015). With the help of a peer debriefer, I examined axial codes to identify emergent themes.

I examined the initial themes and combined themes that overlap. I reviewed the data until I obtained saturation by reading the written transcripts line by line to determine if my themes accurately reflected my data, and I recoded them if necessary. I reached saturation when no additional information was revealed during data collection (Merriam & Tisdell, 2015). I reviewed my themes by rechecking my interpretations against the data.

Member checking is the process where participants examine and provide feedback to validate the data from the interview (Burkholder et al., 2019). I provided participants with a two-page summary of the findings and asked them to send feedback via email. I read all the participants' feedback and asked if further clarification was needed, which I reported. Merriam and Tisdell (2015) suggested that researchers use negative or

discrepant case analysis to seek data that might challenge emerging findings purposefully. I identified and discussed any negative or discrepant findings in detail. I also included quotes from participants' interviews in the results to provide information on their experiences.

Trustworthiness

A researcher needs to consider specific characteristics for a study to be trustworthy. I applied the following strategies: credibility, transferability, dependability, and confirmability to ensure my study is trustworthy (see Merriam & Tisdell, 2015). The way I checked for credibility was to match the interview responses with the RQs (see Burkholder et al., 2019). I used the written transcripts from the interviews as a form of credibility. I established credibility by examining what participants were experiencing versus what the evidence said (see Merriam & Tisdell, 2015).

Dependability is sometimes called reliability, which means the evidence, data collection, analysis, and reporting align (Burkholder et al., 2019). I gained dependability by using member checking. Member checking allows the participants to provide feedback on the data collected during their interview to ensure responses are interpreted correctly (Merriam & Tisdell, 2015). I asked participants to read the two-page summary and asked them to email if there were any questions or concerns. If participants had questions, I took time to discuss them via telephone. I gave the participants more time for questions or concerns; however, if I did not hear from participants after emailing the two-page summary, I concluded there were no concerns or questions. Member checking allows participants to examine a two-page summary and provide feedback to validate the

information from their interview (Burkholder et al., 2019). Member checking contributed to ensuring my study was dependable.

Transferability is a detailed description of the setting, participants, and findings, with quotes from the participant interview providing evidence (Merriam & Tisdell, 2015). Transferability is limited in a small qualitative study; therefore, I provided a thick description of the data. A thick description reports my findings, contributing to my study's transferability (Burkholder et al., 2019). Another strategy to ensure transferability is the selection of a diverse population of participants (Merriam & Tisdell, 2015).

To achieve confirmability, a researcher is objective with the study's findings, and the evidence is supported by the participants' experiences shared during the interviews (Shenton, 2004). A goal for confirmability is for researchers to acknowledge how they interpreted the study's data to eliminate personal biases or prejudices (Burkholder et al., 2019). I achieved confirmability by documenting personal biases, evidence, and data collection in a reflective journal. I used Zoom to transcribe and then manually coded my interview responses to better understand the participants' responses. The goal was to ensure that I did not display biases and that my study was ethical (see Merriam & Tisdell, 2015).

Ethical Procedures

I sought approval for this study and followed ethical requirements according to the Walden University IRB, which was needed to ensure my study followed ethical procedures. Universities have created IRBs to ensure that researchers maintain ethical procedures through organized ethics committees and by using codes of ethics (Ravitch &

Carl, 2016). I completed the Collaborative Institutional Training Initiative course in “Protecting Human Research Participants.” I followed Walden University’s IRB ethical requirements. If I had any ethical concerns related to recruitment materials or data collection, I completed the Adverse Event Reporting Form and sent it to Walden University’s IRB department.

An invitation to participate was posted on the Walden University Participant Pool and early childhood social media sites. I used snowball sampling to select participants for this study. Participants contacted me to indicate their interest in the study, and the interview protocol guide helped screen for the best participants (see Appendix A). I emailed a consent form to participants who volunteered to participate in the study. The consent form described the procedures for data collection, confidentiality, and time required to complete the interview. Within 24 hours, I emailed participants a thank you letter and interview schedule. A follow-up email was sent to participants 48 hours after no response to the initial interview request. Participants received a final request emailed to respond to an interview request 48 hours after no response to the follow-up email.

I discussed ethical concerns related to the data collection process and interventions. I informed participants that they could stop the interview or withdraw from the study without penalty or prejudice. Data gathered from discontinued interviews were destroyed unless the participants allowed me to use their information. Participants could take breaks or reschedule the interview if they became uncomfortable or had an emergency.

Participants' identities are confidential, and letters and numbers replaced their identities for protection, such as A1, A2, A3, and A4, which were used to report the study's findings. I was the only person with access to the data. I will keep the data and audio-recorded interviews for at least 5 years, as required by the university, to avoid any risks of breaching confidentiality.

Summary

In this chapter, I explained the method I planned to use in the research study and the rationale for selecting a basic qualitative research design. I described the researcher's role and the criteria I used for selecting and finding participants. This chapter also included a rationale for data collection and analysis and the types of data and procedures used to collect, store, and analyze data. This chapter included strategies to improve the study's trustworthiness. I identified the measures for the ethical protection of the participants and the data. In Chapter 4, I share the results, including the setting, participant demographics, data collection, data analysis, results, and evidence of trustworthiness.

Chapter 4: Results

The purpose of this basic qualitative study was to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. I used the Walden Participant Pool, early childhood social media sites, and snowball sampling to recruit participants. All study participants received a consent form via email and would reply to me with the phrase "I consent" if they chose to participate. Once the participants provided consent, I would send them a thank you email and an interview scheduling invitation so they could select a convenient date and time. Participants received a reminder email about the upcoming interview, which was audio recorded and transcribed via Zoom. I used open coding to transcribe the data to find themes to answer the RQs of this study.

The RQs for this study were as follows:

RQ1: What are pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the pandemic?

RQ2: What do pre-K and kindergarten teachers believe they need to improve their use of DAP in online instruction?

Chapter 4 includes information on the study's setting, participants' demographics, the data collection and analysis process, and evidence of trustworthiness. The study's results and a summary of the initial RQs will be explained.

Setting

For this basic qualitative study, one-on-one semistructured interviews were conducted on Zoom in the privacy of my home. The participants for this study were 10 state-certified early childhood teachers with at least 3 years of teaching experience who worked with pre-K and kindergarten students during the COVID-19 pandemic. Early childhood social media groups and snowball sampling were used to recruit participants. A study invitation was posted on the Walden University Participant Pool. Once it was determined that the participant met the study's criteria and consent was given, the participant selected a date and time for an interview. I then sent the participant a private Zoom link for the interview. I assigned each participant an alphabetic code A1 through A10. The only issue during the data collection process was obtaining participants. All the participants' interviews were audio recorded and transcribed using Zoom.

Demographics

I conducted a study with 10 pre-K and kindergarten teachers. There were seven pre-K and three female kindergarten teachers who taught pre-K and kindergarten students. The participants' teaching experiences range from 6 to 35 years. The first participant was considered A1, and the second was A2. No unexpected issues affected the analysis of the study's results. Table 1 includes the participants' identifiers, experience with technology, technology professional development, teaching credentials, years of teaching experience, and state of certification.

Table 1*Research Participants*

Research participants	Experience with technology	Technology professional development	Teaching credentials	Years of teaching experience	State of certification
A1	1 year	None	M.Ed. Early Childhood	6	Georgia
A2	5 years	STEAM & Project based	B.S. Elementary Education	12	Georgia
A3	20 years	5-week course	M.Ed. Early Childhood	20	Illinois
A4	Limited	None	M.Ed.	29	California
A5	Limited	None	B.S. Early Childhood	33	Virginia
A6	Average	Alexia, Phoenix, Red Bird, Brand Camp, Renaissance, and Accelerate reader	Ed.S. Curriculum Instruction and Supervision	27	Georgia
A7	9 years	Smartboard	B.S. Education pre-k through 6th	17	Virginia
A8	8 Years	iPads and Smartboard	B.S. Education pre-K through 6th	8	Virginia/West Virginia
A9	2 years	View Sonic Help, RAZ Kids, GROM Reading A to Z	Ed.D. Elementary with STEM endorsement	7	Georgia
A10	20 years	Intel tools and Board maker	B.S. Education with SPED	35	Virginia/West Virginia

Data Collection

I began collecting data once I received approval from Walden's University IRB. The first step to obtaining participants was posting the study to Walden University's Participant Pool and early childhood social media sites. Walden's Participant Pool provided a couple of participants, but the rest came from early childhood social media sites and snowball sampling. Once potential participants notified me of their interest in the study and I ensured they met the study criteria, they received a consent form via email. The consent form disclosed the study's purpose, potential risks, benefits, and the confidentiality clause. Once I received an email from participants that said, "I consent," participants selected a date and time that was convenient for them.

The data collection process took 5 months to complete. All 10 participants were interviewed via Zoom. Each participant was interviewed once for approximately 30-60 minutes. The same interview questions were asked to each participant in the study in the same order to ensure reliability, which helped complete the analysis process. I used a reflective journal to reflect on my personal bias.

To start each interview, I introduced the study and asked for verbal consent to audio record the interview. I asked the participants if they had any questions at that time. Once the interview started, I asked demographic questions to understand their years of teaching experience, state of certification, experience with technology, whether they teach pre-K or kindergarten, and if they attended any professional development on technology and teaching credentials.

Their teaching experience ranged from 6 to 35 years in pre-K or kindergarten. I used the interview protocol to ask my questions and document notes. I used a reflective journal to help eliminate any personal bias. The interviews were audio recorded via Zoom and then transcribed after the interview. Once the transcript was completed, it was reviewed to ensure accuracy.

After completing each interview, I debriefed all participants and reminded them that all interview responses were confidential. I asked the participants if there were any additional questions regarding the interview process; if there were no questions, I thanked them for their time and contribution. I asked participants if they knew of colleagues who met the study criteria and might be interested in participating as part of snowball sampling. After analyzing the data, I informed participants that I would send them a two-page summary of the findings. I also told participants they could email me if they had additional questions or comments on the study topic.

I used Zoom to transcribe the audio recording. I edited each transcript line by line to confirm that I captured what the participant stated during the interviews. All audio recordings are stored on my flash drive. The audio recordings will remain on my flash drive for at least 5 years in my home office, and after that time, they will be deleted. The only issue during the data collection process was obtaining participants.

Data Analysis

I used Saldaña's inductive and deductive reasoning to analyze the data collected in this study. Once the participants' audio responses were downloaded from Zoom into written transcripts, I began the data analysis. I used deductive reasoning using *a priori*

codes created from the framework, RQs, and purpose (see Saldaña, 2016). Open coding was used to identify repetitive words, phrases, and important concepts to help answer the RQs. Throughout the coding process, I kept a code book in an Excel spreadsheet and defined codes based on the quotes from the participants' interviews. This helped me to code the interviews accurately and apply the same code consistently for similar words across the transcripts. Then, I engaged in many cycles of organizing the codes into categories. The categories were used to complete a second coding cycle called axial coding. I examined axial codes to identify emergent themes.

Phase 1: Familiarizing Myself With the Data

I compared each audio recording with the written transcript to ensure accuracy. All interviews were analyzed in the order they were completed. Each participant was assigned an alphanumeric code (e.g., A1, A2) to ensure confidentiality. The transcripts were reviewed carefully through several readings to understand the data comprehensively. Throughout this process, I took in-depth notes and kept a reflective journal. Then, I uploaded each transcript into an individual Excel spreadsheet. Each spreadsheet's transcript was organized into columns containing a narrative excerpt, a *priori* code, an open code, the code source, and a brief definition of the code.

Phase 2: Generating Codes

Inductive and deductive reasoning were used to analyze the data collected in this study from the participant interviews. Once the participants' audio responses were downloaded from Zoom into written transcripts, I began the data analysis. I read each transcript carefully, taking notes and using a reflective journal while coding. Then, I

reviewed each transcript line by line, identifying notable keywords, phrases, and concepts relevant to the conceptual framework and RQs. The extracted excerpts were compiled in a column labeled “excerpts” in the Excel worksheet. I assigned a corresponding a priori code for each excerpt, recording them in a separate column labeled “*a priori* code.”

I used deductive reasoning using *a priori* codes created from the framework, RQs, and purpose (see Saldaña, 2016). A priori codes for this study included (a) inclusive learning environment, (b) collaborative partnerships, (c) documenting student's growth and development, (d) individualized learning activities, (e) curriculum to enhance students' growth and development, and (f) professional development. Examples of excerpts representing *a priori* codes are in Table 2.

Table 2*Examples of a Priori Codes*

Code	Participant	Excerpt
Inclusive learning environment	A7	“And then we also are fully inclusive in G.C. and preschool, so not only do we have threes and 4 as we also have 4 with IEPs in my classroom.”
	A10	“During COVID, we were inclusive to ages 2 to 5, and they were all together on the Zoom.”
Collaborative partnerships	A1	“I’m a co-teacher, so I have another teacher that I work alongside of special end teacher, and so we were both online at the same time.”
	A6	“Sure, we had a digital learning specialist. She would hold trainings and go over the different apps and platforms that we had, so yes, that was pretty much it.
Documenting students' growth and development	A3	“I still would do my little anecdotal notes because you know you record your Zooms, which is wonderful, so you can go back, and you can actually listen and hear anything that you want to assess.”
	A5	“You know, what color is this, what number is this, what shape is this and to try to, you know, to assess that way.”
Individualized learning activities	A6	“Developmentally appropriate practice deals with where the individual scholar is.”
	A2	“We would allow them to have like, you know, brain breaks where they would go and do other things somewhere else and then come back to the screen.”
A curriculum to enhance growth and development	A9	“And that goes with the curriculum and the assessments I feel like both of those go into what developmentally appropriate is.”
	A8	“I don't know if you're familiar with the Creative Curriculum, but it's, it's a color chart, and so basically, I was asking parents to give me which color does your kid fall in.”
Professional development	A7	“Yeah, it's a letter-sound curriculum that we used for a while in preschool, kindergarten, and first grade.”
	A4	“Actually, you know what I take that back I did attend in one class on technology integration, and it was awful; I actually did at a conference.”
	A10	“Cheap talk, Board maker, and then class hanging tree like your holiday items for.”
	A1	“Technical trainings on how can you use Google Meet, how can you use the Google Drive like can make that accessible.”

Then, I began inductive reasoning using open coding. I reviewed each transcript line by line, identifying notable keywords, phrases, and concepts relevant to the conceptual framework and RQs. The extracted excerpts were compiled in a column labeled “excerpts” in the Excel worksheet. For each excerpt, I assigned a corresponding open code, recording them in a separate column labeled “open code.” Once the codes were created, I organized them in an Excel-based codebook template, including details such as the code, participant identifier, example excerpt, and the coding cycle. As new codes developed, extra rows were added to the Excel spreadsheet. A total of 120 open codes were identified during this process. An example of eight open codes, participants' identifiers, and excerpts from the data confirming the code origins is presented in Table 3.

Table 3*Examples of Open Codes*

Code	Participant identifier	Excerpt
Students' DAP needs	A1	"So, DAP means to me is making sure that each child is served on their development level, not their age level, not their grade level, not the class that they are in, but their individualized developmental area."
	A6	"Developmentally appropriate practice deals with where the individual scholar is."
Mixed classrooms	A7	"So we used to only have 4-year-olds in our preschool classroom and now we have 3 and four-year-olds."
	A4	"And then our classroom teachers had the kindergarteners, and some of them were special needs students."
Assessing students	A2	"But also my school also administered the map assessment."
	A5	"You know, what color is this, what number is this, what shape is this and to try to, you know, to assess that way."
Training teachers	A9	"But I definitely need some trainings that would be great just offering courses and things." "I think what I would really like to see it's actually more workshops and professional development on it."
Parent support	A3	"But I would say that I might have had success with 40% of my children and the parents actually participated."
	A8	"But the parents that were just sporadic about it, I don't know, we would have parents that would say, well, I couldn't get my child to join in or we were we overslept today."
	A10	"And so I eventually started to a choice board where I sent video links and activities and just put little things that they can do."
Engaging activities	A1	"But you may get a child that's a little more advanced than what the developmental stages say and they may need extra stuff in the classroom to keep them interested and to push them to the next level."
	A3	"A lot of support my administrators were absolutely wonderful."
Administration support	A2	"Well manage production, I feel like county-wide, like the teachers of K through 12, I feel like they got what they needed."
	A7	"Just making sure that the technology is up to par because the issue comes in when you're dealing with the younger scholars, and you may have this dynamic lesson plan, but the technology isn't working the way it needs to."
Offering students technology imperative	A6	"And that's one thing I feel like we failed in preschool; we didn't give them devices."
	A8	

Axial coding was used to create categories from the codes in the Excel spreadsheet. I created another spreadsheet using all 6 *a priori* codes and the 120 open codes on a separate line. Each of the 120 codes was arranged in different spreadsheets into categories. I reviewed the codes and categories numerous times to ensure that each code aligned with the category and that all categories represented each code assigned. I created 11 categories from this process. Examples of the open codes and categories are in Table 4.

Table 4*Examples of Open Codes and Categories*

Category	Code	Participant identifier	Excerpt
Students and online learning	Offering students technology imperative	A4	“Is it better to offer technology if a student has nothing, absolutely, because it's a means of reaching them and giving them some instruction.”
	Provide students learning materials	A3	“They made sure that the children had the materials that they needed when on the Zoom.”
Fun and engaging learning activities	Make activities engaging and hands-on	A1	“But it's, it was very difficult with the technology portion of it and making sure it's still engagement, making sure we still find ways to make it hands on during that time.”
	Student activities	A6	“The beginning sounds of words that correlate with that particular letters because what I find with the youngest scholars is definitely needs to be hands-on or music activities.”
Collaborative teaching teams	Teachers planned breakout rooms	A2	“So we would use breakout rooms, and each teacher would plan.”
	Teaching team planned activities	A10	“Well, luckily I had a teaching partner during that time and like we planned lessons together.”
Parent involvement	Parents support	A5	“They could find this activity and find what was going on special somewhere, you know, all this stuff.”
	Parents asked for assistance	A9	“And the ones that I knew whose parents, you know, were really involved and were trying to work with me online but couldn't access Zoom or something like that, I would just give them a call, and I would try to just ask students questions.”
Assessing students development	VKRP/PALS assessment	A7	“Just like we were talking about those assessments that I give the VKRP and the PALs, they still were required to take those, and so like mid-year and spring we would have we had to redo them.”
	Assessing students	A2	“So we would always give pre and post-assessments to our students.”
Students developmental levels	Enhancing students developmental levels	A8	“So, just promoting that progress and pushing them forward, and if it's developmentally appropriate, then It is what should come next in their development.”
	Support students' developmental domains	A10	“You take into consideration their physical, their cognitive, their social, their emotional well-being and development and incorporate practices, recognize, and support the individual as a valued member of the learning community.”
Various instruction techniques	Instructional videos/songs/stories	A7	“And then I would send an instructional videos, songs, stories, and things that kind each group needed or to try to meet them where they were, so to speak.”
	Provided quality online instruction	A9	“Still, it wasn't the same level of instruction as if they were face to face, but they still were receiving a quality instruction because they had supplies and they were able to watch me online.”
Teachers need technology training	More technology workshops/training	A3	“Now, for me personally, I would love to see more workshops and finding more professional developments available for educators.”
	Training teachers	A8	“But I would say that it wasn't enough trainings provided, and there wasn't a whole lot of communication.”

Phase 3: Searching for Themes

When axial coding was completed, I examined the categories to identify emerging themes from the entire dataset. The categories were arranged according to similar meaning and characteristics. Four themes were derived from the analysis: (a) teachers planned developmentally appropriate fun and engaging individualized learning activities, (b) teachers used collaborative teaching teams, (c) teachers need more professional development in online instruction and technology, and (d) teachers need support with online instruction from parents and administration. Thematic analysis was used as a guide to categorize the various patterns to create themes according to the RQs.

Phase 4: Reviewing the Themes

I reviewed the codes and categories multiple times in Phase 4 to ensure they aligned with the themes. I used an Excel spreadsheet to create an audit trail and to ensure a clear path from codes to categories to themes. I reviewed the transcripts, codes, and categories several times to ensure clarity and data to support the creation of each theme.

I reviewed the transcripts repetitively to ensure themes aligned with the data. I reviewed the alignment of codes to categories to themes. Then, I considered and determined that the themes answer the RQ. I chose to work with two peer debriefers to assist with reviewing my findings to determine that the RQs were answered. I sent the results of my data analysis to peer debriefers for feedback. The first debriefer was a coding analyst, and the second was a professor of statistics; both are familiar with research data analysis but unconnected to this study or me. The peer debriefers determined the findings to be grounded in the data and that the themes answered the RQs.

Phase 5: Defining and Labeling Themes

I defined and named all final themes in Phase 5. I evaluated the significance of each theme in answering the RQs and reviewed the categories to ensure that the themes accurately reflected the categories. I did not find any discrepant cases or evidence that would contradict the finding during the data analysis process; therefore, no further analysis is required. Merriam and Tisdell (2015) suggested that researchers use negative or discrepant case analysis to seek data that might challenge emerging findings purposefully.

The first RQ for this study was as follows: What are pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the pandemic? The themes identified to answer the question were (a) teachers planned developmentally appropriate fun and engaging individualized learning activities, and (b) teachers used collaborative teaching teams. The second RQ for this study was as follows: What do pre-K and kindergarten teachers believe they need to improve their use of DAP in online instruction? The themes identified to answer the question were (c) teachers need more professional development in online instruction and technology, and (d) teachers need support with online instruction from parents and administration. Categories and themes can be found in Table 5.

Table 5*Categories and Themes for Research Questions*

Theme	Categories
Teachers planned developmentally appropriate fun and engaging individualized learning activities	Fun and engaging learning activities
	Various instruction techniques
Teachers used collaborative teaching teams	Assessing students development
	Collaborative teaching teams
	Students and online learning
Teachers need more professional development in online instruction and technology	Students developmental levels
	Teachers need technology training
Teachers need support with online instruction from parents and administration	Teacher challenges and obstacles
	Parent involvement
	Lack of support from administration
	Technology and resource issues

Phase 6: Producing the Report

The final phase was to summarize the themes and write the results in the final report. After the data analysis, I ensured the themes answered the RQs. A brief summary of the codes and themes determined during the data analysis was created (see Appendix C). Then, I used the four themes as the foundation to write about the study's findings.

Results

I explored early childhood teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they needed to improve their use of quality DAP online instruction. I asked 10 interview questions for each interview. The interview questions were developed using the literature review, DAP, and PTD theory.

Four themes were developed from the data analysis process. The themes were (a) teachers planned developmentally appropriate fun and engaging individualized learning activities, (b) teachers used collaborative teaching teams, (c) teachers need more professional development in online instruction and technology, and (d) teachers need support with online instruction from parents and administration.

The early childhood teachers' perspectives on implementing DAP in online instruction were created from their experiences using collaborative teaching teams to provide DAP online instruction. The participants generally believed they planned fun and engaging developmentally appropriate individualized learning activities. The participants perceived a lack of professional development in online instruction and technology for pre-K and kindergarten students. Hence, the participants generally perceived that they needed support with online instruction from parents and administrators to improve their use of quality DAP online instruction.

RQ1

RQ1 was as follows: What are pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the pandemic? The participants shared two main themes on implementing DAP online instruction. The first theme was that teachers planned developmentally appropriate, fun, and engaging individualized learning activities. The second theme was that teachers used collaborative teaching teams.

Theme 1: Teachers Planned Developmentally Appropriate Fun and Engaging Individualized Learning Activities

All the study participants provided their perspectives on how they implemented DAP online instruction during the COVID-19 pandemic to pre-K and kindergarten students in the first theme, planned developmentally appropriate fun and engaging individualized learning activities. All participants also shared their understanding of DAP and how they used the teaching strategy to plan fun and engaging learning activities that supported pre-K and kindergarten students' growth and developmental milestones. All participants discussed their perspectives on planning and implementing developmentally appropriate fun and engaging individualized learning activities; however, five participants in the study had problems maintaining students' interest and engagement.

DAP and Individualized Instruction

When participants discussed their definition of DAP online instruction, most teachers said to focus on the individual student's developmental needs, which is aligned with the DAP teaching strategies individualized learning environment and activities. Participant A6 stated, "Developmentally appropriate practice deals with where the individual scholar is." A few participants reported that DAP online learning activities should be engaging, relevant, and challenging to student's developmental levels. Participants A9, A8, A1, A3, and A4 made similar statements when defining DAP online instruction. A9 stated, "I would say make sure that the topics and everything be covered are relevant to students not only their age but their maturity level." A8 shared, "We want to meet each kid on their level, and not necessarily we are not making things easier for

children.” A1 shared, “So, DAP means to me is making sure that each child is served on their development level, not their age level, not their grade level, not the class that they're in, but their individualized developmental area.” Another participant stated they prefer activities and interactions with children based on their developmental level. A4 stated, “The other thing we try as a whole team to make sure that when implementing developmentally appropriate practices, we are also gearing it so the children are excited to learn, so that way that they're engaged.” This highlights the significance of emphasizing the importance of planning individualized DAP online learning activities focused on developmental learning objectives.

All participants shared how they planned DAP online learning activities using the developmental learning objectives for their students. Participants discussed planning online learning activities for their students using the developmental learning objectives. Participant A10 stated, “You take into consideration their physical, their cognitive, their social, their emotional well-being and development and incorporate practices, recognize, and support the individual as a valued member of the learning community.” While A2 suggested, “Things of that nature to just help build their cognitive and language development and also programs that will allow the children to interact amongst each other online and communicate, especially when they were not in the school building.” All participants also shared how adapting online learning activities for pre-K and kindergarten students is a factor in providing DAP online instruction. Participants A2, A4, and A7 shared that online instruction should be differentiated to meet students' needs. All participants in the study discussed providing a variety of fun and engaging

individualized online learning activities for pre-K and kindergarten students during the COVID-19 pandemic.

Fun and Engaging Learning Activities

All the participants in the study discussed planning fun and engaging online learning activities for pre-K and kindergarten students using the DAP teaching strategies in their online learning environment. All the participants discussed the various materials, teaching methods, and resources they used to create hands-on, fun, and engaging online learning activities for their students during the COVID-19 pandemic. When discussing her experience with creating hands-on, fun, and engaging online learning activities A9 shared,

So, for reading, for example, what I would do is I would try my best to give parents a packet on Fridays. I would leave them up in the front office based on what I will be covering the following week, and I would have printed out copies of books that we will be doing, maybe one or 2 supplemental worksheets. And then also some manipulative so like for reading they would have some letters at the house when we spell words. Then, for math, they would have something that they could count with, like some little blocks.

All the participants discussed using a variety of learning modalities, such as small groups, videos, and tangible materials to engage students in online learning activities. A5 stated, “We read stories and like I said, we record like a small group activity or something that we could do like a little experiment, or something just show them some things.” A7 stated, “You know, you have some kids that were ready to start learning the letters and

their sounds and things like that, so I would try to send videos like that.” The participants in the study discussed providing pre-K and kindergarten students with real materials and physical activities to encourage a fun and engaging online learning environment.

Some participants shared that they provide students with physical learning activities during online instruction. A3 shared, “But when you're doing online with children, you have to realize that they're sitting in their sedentary, so you have to mix up; you have actually to have them get up and do activities.” A1 responded similarly to the previous participant; she said, “And so what I found is like we had to do things, well, I decided to do things like, okay, it's music and movement. They don't want to watch your screen.” The fun and engaging learning activities provided by the participants in the study were provided through various online learning programs.

All participants shared how they used either DOJO, recordings, Google videos, YouTube, or other online learning programs to provide pre-K and kindergarten students learning activities. A8 stated, “I use Canvas for a while, but then Google Classroom.” A10 stated, “I used a program called DOJO classroom, and I had every child or parent sign into that program.” A7 shared, “When COVID first hit, I kind of had gotten to know that group a little bit and kind of knew where they were, so I would use Canvas like as a county-wide online tool.” Some participants discussed using Zoom as their online learning program during the COVID-19 pandemic. A1 shared, “So when it came to Zoom, they had to move the letters. They had to know, you know, I need to match the J with the J, or we had different interactive things.” A9 stated, “Writing instruction was pretty simple; what we did was I recorded a writing list, and I would give them a

complete lesson, and they would upload the lesson back to me through Zoom.” While participants discussed their success with Zoom, some found their Zoom online instruction challenging. Participants A2 and A8 faced challenges when using Zoom with their students. Participant A2 discussed how they faced Zoom challenges: “It was kind of hard being on a Zoom setting and trying to keep 18 students engaged all in one room. So, we would use breakout rooms, and each teacher would plan.” A8 stated, “Kids don't know how to take their turn on a computer screen to talk, so Zoom failed us because everybody can't talk at once.” There were other online learning programs that the participants in this study used and liked.

All the participants shared the various online learning programs they used to provide online instruction to pre-K and kindergarten students, which included Google Classroom, DOJO, CANVAS, Zoom, and other online learning programs. A10 shared, “We would Google lessons, or I would make up lessons like I did a YouTube unit; I did like matching activities. And I did a series of videos.” Some participants reported using other online learning programs that some teachers did not use during the COVID-19 pandemic. Participant A8 used sonic board, A9 used RAZ Kids, Reading A to Z, A3 used EPIC books, and A6 used Alexia, Phoenix, Red Bird, Brand Camp, Renaissance, and Accelerate Reader to facilitate fun and engaging developmentally appropriate online learning activities to pre-K and kindergarten students during the COVID-19 pandemic. A couple of participants shared how they ensured the online learning environment was interactive for students and parents. Participant A4 shared, “Books were interactive where the parent could like click with the child and go from one link to another and on

the pages where it flowed from one to the next with different types of literature.” A9 shared, “Going live with the Zoom lessons and RAZ Kids books because those were very interactive, and they also still had their school logins so they could use the computerized programs that they use in class.” The fun and engaging learning activities participants planned supported pre-K and kindergarten students' growth and developmental milestones if the students were engaged.

Most participants successfully engaged students in online instruction, while others did not. Participant A3 discussed how she planned according to students' interests and engagement. She stated,

It got to the point where we would plan something from like 10 to 12 minutes, which was a long time for them, but then it would be like the children would be asking us questions, and they would want more, and they would want more, and they would want more, so we would extend it.

Some participants discussed how they saw their student's developmental growth during online instruction. A1 shared, “Now, the success I had was empowering them, letting them know they're smart, letting them know that they can do it.” A6 stated, “I did have, you know, scholars who may made some academic gains, you know, and they were more savvy with the use of the technology.” A5 shared, “Some will take off with that technology; they really will figure out those little games that work for them, and they enjoy that piece, and for some kids, that really does work for them.” A7 stated, “So, like kids that weren't meeting benchmarks on those assessments in the fall, by spring, they were meeting the benchmarks or at least raising their score several points, if that makes

sense.” A10 mentioned, “The child would do the assessment and then submit it to us. So, we could see what they were learning and if we were effective.” However, not all participants students were engaged during online instruction during the COVID-19 pandemic.

Most participants shared that they created online learning communities for students, but it was hard to tell if students had completed online learning activities. Participant A8 stated,

Well, it was an interesting task at hand, but I created a website, and I took each objective from our curriculum that is aligned to the developmental standards. I then created a page for every category so one whole page was on language skills, gross motor, and fine motor. I went through and put several activities for every objective, and then I would link videos and things like that so parents had all the resources they could possibly want.

Participant A2 shared her perspective on planning fun and engaging learning activities. She stated, “And so if we were planning things that either they already knew, or things that weren't challenging or did not engage, it was a waste of time.” Participants provided pre-K and kindergarten students with various activities using hands-on learning materials. The participants in the study conducted small groups, letter games, number games, scavenger hunts, and other online learning programs to increase students' growth and developmental milestones using DAP online instruction during the COVID-19 pandemic.

Theme 2: Teachers Used Collaborative Teaching Teams

When asking participants about their perspectives on how they implemented DAP in online instruction during the COVID-19 pandemic, eight participants shared their perspectives on using collaborative teaching teams, while two participants worked independently to provide DAP online instruction. The eight participants shared that they collaborated with fellow teachers, other schools, parents, and community members to provide pre-K and kindergarten students with online learning. Collaborative teaching teams were essential for teachers to provide quality DAP online instruction.

Many participants in the study used collaborative teaching teams to conduct online learning activities for pre-K and kindergarten students. While using DAP online instruction during the COVID-19 pandemic, A2 stated, “Yes, so my co-teacher and I, as well as the other kindergarten teachers, planned amongst ourselves first.” One participant discussed using a hybrid online learning approach for her students. Participant A4 shared how her co-teacher provided instruction to the students learning virtual instruction while she provided in-person instruction. Participants discussed how they took turns planning weekly lessons to support student’s development; A10 responded, “Okay, well, we plan them together. She would take Science for one week, and I would do the art activity and the writing activity.” Participant A3 shared her experience of using an online learning program with a co-teacher, stating, “And again, it was wonderful because, you know, I actually had another teacher that would be on Zoom with me, and she would actually type in the answers, and then they would be able to see their charts.” Most of the participants in this study shared online learning activities and offered suggestions to peers during the

COVID-19 pandemic. Participant A9 stated, “So I was trying to learn for myself as well as help my teammates, you know, offering suggestions; hey, this is what I do in my classroom.” Some participants found it beneficial to collaborate with peers based on their experience with technology. A5 worked with a co-teacher to plan different activities because she was uncomfortable with technology. A participant had a digital learning specialist who provided training on various online learning programs for students and collaborated with peers. A6 stated,

We had a digital learning specialist. She would hold trainings and go over different apps and platforms we had so yes, that was pretty much it. She would do those workshops, and then I would get with my teams, and then we would, you know, do our own kind of research and see what else is out there and things like that. But she was our main point, our digital learning specialists, and some of the apps that I got trained on were the ones that we discussed earlier; then we talked about the it's learning, brand camp, and then I got training on learning pod as well too.

Some participants also discussed how they supported students' needs using teacher collaboration. A few participants shared how they collaborated with other peers to support students' growth and development needs. One stated, “If we had any students that were not performing very well and needed an additional teacher online with us, we actually had, like our RTI teachers, to come on.” Participant A6 explained how she used parents and fellow teachers to support students during online learning. She stated,

I would seek guidance from colleagues just to see what ideas they may have, of course pulling in the parents and then pulling in other resources like our MTSS Coordinator and making the determination as to whether or not I feel like it's necessary to begin that process.

Some participants in the study discussed how parent or adult supervision is an essential part of collaboration during online instruction. Participant A8 stated, “40% of them actually were doing the activities or doing something to observe their kid and working on that scale, and they would put notes in and say, you know, we did this or whatever I provided that day”. Some participants collaborated with parents to support students' learning at home and with developmental assessments. Participant A2 shared how teachers taught parents online learning activities to support their students at home. Participant A10 collaborated with parents to complete student assessments. Parent and teacher collaboration is essential when teaching pre-K and kindergarten students online.

A few participants discussed collaborating with outside community agencies and other schools to facilitate online learning activities for students. Participant A10 shared her experience of collaborating with a community member. She stated, “We had a fellow that came and did puppets with us.” Participant A4 discussed how she collaborated with another school system to provide online instruction to her students. She shared, “We learned quickly about the children we would filter from different schools into our program.” Collaborative teaching teams are essential for teachers when providing quality DAP online instruction to pre-K and kindergarten students. Participants collaborated with fellow teachers, other schools, parents, and community members to provide pre-K and

kindergarten students with quality DAP online instruction. Participants collaborated in in-person, online, and hybrid learning environments to provide online instruction to pre-K and kindergarten students. Participants collaborated in online lessons and activities to support pre-K and kindergarten students learning and development during the COVID-19 pandemic.

RQ2

RQ2 was as follows: What do pre-K and kindergarten teachers believe they need to improve their use of DAP in online instruction? The participants shared two main themes on what they need to improve their use of DAP online instruction. The first theme is that teachers need more professional development in online instruction and technology. The second theme is that teachers need support with online instruction from parents and administration.

Theme 3: Teachers Need More Professional Development in Online Instruction and Technology

When the participants in the study were asked what they needed to support their use of DAP online instruction, they agreed they needed more professional development in online instruction and technology. The participants' experience using technology with pre-K and kindergarten students varied from 6 to 35 years. Some participants discussed using the Creative Curriculum and TOOLS of the MIND curriculum; however, the curriculums were not intended for online instruction. All 10 participants indicated they need more professional development in online instruction and using technology with pre-K and kindergarten students.

The early childhood teachers reported the need for more professional development in online instruction and technology. All participants shared their perspectives on online instruction and technology training they received during the COVID-19 pandemic. Participant A8 shared, “Well, I mean a good training, probably could use some more good training on how to support technology with kids.” A7 stated, “Probably some professional developments and trainings for online on how technology works the best and most efficient for preschoolers. But, I think, yeah, PD and some training on ideas of things that we could do differently or, I think, providing all the preschoolers with a Tablet.”

When asked about PTD, participants gave their interpretation of the online learning theory, and all participants said they did not know anything about it or gave an interpretation of the theory. Participants A2, A4, A5, and A8 stated they did not know or were unsure of the terminology PTD. A3 stated, “So, you know, I’ve never heard that term.” There were a few participants who received training on CANVAS, Alexia, Phoenix, Red Bird, Brand Camp, Renaissance, Accelerate Reader, RAZ Kids, Brand Camp, and Zoom during the COVID-19 pandemic; however, the remaining participants did not receive training and shared that they needed training to provide quality DAP online instruction to pre-K and kindergarten students.

Teachers need to feel comfortable with implementing technology in the classroom. Participant A5 stated that she needs her technology training to be one-on-one and that she is not comfortable using technology in the classroom.” Participant A3 suggested,

So, I think if people like had workshops and trainings on it that's not just about being on Zoom, there's other ways that you could implement technology in the day-to-day lives of children, it wouldn't be so scary for people.

When Participant A1 was asked what she needed to support her with DAP online instruction, she stated, “Technical training on how you can use Google Meet and how you can use Google Drive can make that accessible.” A few participants shared how professional development should focus on technology enhancing students’ development. A4 stated, “I just think we need more and where we use technology only to enhance instruction.” A7, who had technology and online training from a digital specialist, said, “Probably some professional development and training for online on how technology works the best and most efficient for preschoolers.” All participants expressed a need for quality professional development and technology training to provide DAP online instruction to pre-K and kindergarten students. Participants also shared a need to have support with online instruction from parents and administrations.

Theme 4: Teachers Need Support With Online Instruction From Parents and Administration

All participants discussed the need for support from parents and administration in providing DAP online instruction to pre-K and kindergarten students. Eight participants in the study shared that they did not receive any support from parents in assisting students with online activities, while two had supportive parents. Seven participants received no support or training in implementing DAP online instruction from their administration, while three had support from the administration. Five participants from the study did not

receive support from parents or the administration. Only one participant from the study had supportive parents and administration. However, all participants discussed their perspectives on the lack of parent support with online instruction during the COVID-19 pandemic.

Parent Support

The lack of parental support was common when discussing what participants needed to implement DAP online instruction to pre-K and kindergarten students. All participants expressed numerous reasons why parents did not ensure their students were engaged in online instruction during the COVID-19 pandemic. Participant A2 stated, “Parents did not get their students online at the appropriate time, and they would miss a lot of instruction.” A10 shared, “But the parents that were just sporadic about it, I don't know, we would have parents that would say, well, I couldn't get my child to join in or we were we overslept today.” The parents’ lack of support was always explained, but these explanations were not helpful. Participant A9 shared, “Some of the parents had a lot of excuses, and I hate to use that word.” A8 stated,

I had some families just ghost us like they didn't want to talk to me; no, I mean, they didn't have time; they were a busy family during that time, whether they worked in the medical field or some field that required more hours than normal and a lot of kids spent a lot of time with grandparents.

Participant A1 shared, “I think the biggest challenge was the reluctance of the parents and how they would oftentimes do it for them.” The lack of parent support continued to challenge teachers when implementing DAP online instruction.

Participants continued to provide their perspectives on parent involvement with online instruction. Participants A5 and A6 shared that parents were disconnected and struggled. A7 stated, “I think some parents just take preschool too lightly, like they didn't think it really is that important.” Even though most participants did not have a lot of parent support, this was not the case for some participants; they had a lot of parent support. Participant A4 stated,

When the internet would go down, everybody would get kicked off, and everybody would have to log back in. And for parents with young children, some of them just didn't come back that day, and this was an ongoing challenge that we had.

Parental support is essential when providing pre-K and kindergarten students DAP online instruction. A3 shared, “The only problem area that you might have is like maybe a parent couldn't come and pick up the materials.” Participants also had to deal with the administration not supporting them with DAP online instruction to pre-K and kindergarten students during the COVID-19 pandemic.

Administration Support

Participants discussed the need for support from their administration, reliable internet, and technology devices to implement quality DAP online instruction for pre-K and kindergarten students during the COVID-19 pandemic. When discussing what support participants received from their administration, most said their administration provided no support. Participants A1, A4, A5, and A9 shared that they did not receive

any support from their administration. When A4 was asked what support she got, she stated, “None and the state was awful too.” Participant A7 shared,

A well-managed production: I feel like pre-K was a little bit overlooked or put on the back burner. I don't know that it was done purposely, like on purpose, but I feel like it was just kind of like not that we didn't matter, but it wasn't as important for us to receive tablets or Chromebooks or hot spots.

Participants expressed their perspectives on how the administration can support online instruction. A10 stated, “What do I need? Well, first of all, I need for the administration to buy into technology.” Due to the lack of administrative support, A8 stated, “And that's one thing I feel like we failed in preschool: we didn't give them devices. We did not provide technology for them.” The lack of parental and administrative support hindered teachers from providing quality DAP online instruction to pre-K and kindergarten students. The lack of technological devices and resources affected the quality of DAP online instruction provided by teachers.

The participants expressed a lack of quality technological devices, internet, and resources, which hindered them from providing quality DAP online instruction.

Participant A9 shared, “My school is located in an area where there's really very limited access to technology and the Internet.” When discussing technology challenges with online instruction, A8 shared, “The district was kind of at a loss because they were trying to figure out how we could get a majority of our kids just internet.” A3 stated, “Another challenge is sometimes there is the technological difficulties.” Participants A1, A4, and A5 shared that they dealt with internet connection issues where the internet would not

connect, cut off, or buffer. Participant A7 stated her challenges were a lack of internet and online learning resources. Participants expressed numerous problems they experienced from the lack of support from parents and the administration. When participant A6 was asked what she needs to support her with DAP online instruction, she stated, “Just making sure that the technology is up to par because the issue comes in when you're dealing with the younger scholars and the technology isn't working the way it needs to.” Participants also discussed their challenges with quality technological devices, internet, and resources, which hindered them from providing pre-K and kindergarten students with quality DAP online instruction, and support from others could be used to assist teachers with these problems.

Evidence of Trustworthiness

A researcher must consider specific characteristics for a study to be trustworthy. I applied the following strategies: credibility, transferability, dependability, and confirmability to ensure my study is trustworthy (see Merriam & Tisdell, 2015). I attained trustworthiness in this study by establishing credibility, transferability, dependability, and confirmability. This section describes how I accomplish this and why it validates the study. No changes were made to the strategies to obtain trustworthiness, as noted in Chapter 3. To establish the trustworthiness of the research results, I audio-recorded the interviews, used my reflective journal, ensured that participants met the study's criteria, and identified discrepant cases. Discrepant case analysis was included in this study because it helped to recognize alternative viewpoints, conflicting data sources,

and a comprehensive of strengths and weaknesses of existing data. Member checking was used to secure the trustworthiness of the data.

Credibility

The way I checked for credibility was to match the interview responses with the RQs (see Burkholder et al., 2019). I interviewed pre-K and kindergarten teachers from the United States with at least 3 years of teaching experience. I used the written transcripts from the interviews as a form of credibility. I established credibility by examining what participants were experiencing versus what the evidence said (see Merriam & Tisdell, 2015). I established credibility through member checks and reviewing study findings in a two-page summary with participants. The participants agreed with the results of the research and accepted the findings of the study. The relationship between saturation and sample size occurs when data becomes repetitive and no new themes emerge (Weller et al., 2018). I achieved data saturation with the 10 participants teaching pre-K and kindergarten students. I adhered strictly to the interview protocol and used a reflective journal during the research process to identify any bias that might have affected the study.

Dependability

Dependability is sometimes called reliability, which means the evidence, data collection, analysis, and reporting align (see Burkholder et al., 2019). I established the dependability of the results through audio recordings and Zoom to transcribe and then manually coded my interview responses. I also maintained a reflective journal to prevent bias during the data collection and analysis. The interview protocol guide was used to ask

each participant the interview questions in the same order. Comparing emerging themes with the conceptual framework and RQs helped ensure the validity of the study's results. Before the interview, participants were told they could release themselves from the study at any time. I gained dependability by using member checking. Member checking allows the participants to provide feedback on the data collected during their interview to ensure responses are interpreted correctly (Merriam & Tisdell, 2015). I asked participants to read the two-page summary and asked them to email me if there were any questions or concerns. If participants had questions, I took time to discuss them via telephone. I gave the participants more time for questions or concerns; however, if I did not hear from participants after emailing the two-page summary, I concluded there were no concerns or questions. Member checking allows participants to examine a two-page summary and provide feedback to validate the information from their interview (Burkholder et al., 2019). Member checking and an audit trail contributed to ensuring my study was dependable.

Transferability

A thick description reports my findings, contributing to my study's transferability (Burkholder et al., 2019). Transferability is limited in a small qualitative study; therefore, I provided a thick, rich description of the data. Through a detailed description and the use of participants' responses, interpretations could be drawn regarding the appropriate transferability of findings to subsequent studies on early childhood teachers' perspectives on DAP in online instruction during the COVID-19 pandemic. Transferability is a detailed description of the setting, participants, and findings, with quotes from the

participant interview providing evidence (Merriam & Tisdell, 2015). Another strategy to ensure transferability is the selection of a diverse population of participants (Merriam & Tisdell, 2015). In representing parallels between my study and their online learning environments, administrators can apply findings to hold professional development and training sessions on DAP online instruction for early childhood teachers. I provided thick descriptions, context, and demographic data so readers could judge the appropriateness of transferring or making comparisons.

Confirmability

To achieve confirmability, a researcher is objective with the study's findings, and the evidence is supported by the participants' experiences shared during the interviews (Shenton, 2004). A goal for confirmability is for researchers to acknowledge how they interpreted the study's data to eliminate personal biases or prejudices (Burkholder et al., 2019). The goal was to ensure that I did not display biases and that my study was ethical (Merriam & Tisdell, 2015). I achieved confirmability by documenting personal biases, evidence, and data collection in a reflective journal. I used Zoom to transcribe and then manually coded my interview responses to better understand the participants' responses. I used my reflective journal to help identify and eliminate bias and ensure the research aligned with the literature and conceptual framework. I minimized discriminatory language by transcribing the participants' responses verbatim.

Summary

Chapter 4 contained the data used to explore pre-K and kindergarten teachers' perspectives of DAP online instruction during the COVID-19 pandemic. Ten one-on-one

semistructured interviews were conducted with pre-K and kindergarten teachers in the United States to obtain their perspectives on DAP online instruction. I utilized a reflective journal throughout the data collection and data analysis process. Four themes emerged from the data to answer the RQs: (a) teachers planned developmentally appropriate fun and engaging individualized learning activities, (b) teachers used collaborative teaching teams, (c) teachers need more professional development in online instruction and technology, and (d) teachers need support with online instruction from parents and administration.

I used Saldaña's inductive and deductive reasoning to analyze the data collected in this study. *A priori* codes were created from the framework, RQs, and purpose (see Saldaña, 2016). Open and axial coding of the participant's responses required reviewing, classifying, and organizing data from the participant's statements. From this, I could organize the participants' responses into meaningful themes—Theme 1 and Theme 2 answers RQ1.

Theme 1 was that teachers planned developmentally appropriate fun and engaging individualized learning activities. Teachers shared their understanding of DAP and how they planned fun and engaging learning activities that supported pre-K and kindergarten students' growth and developmental milestones. However, some teachers faced challenges in maintaining students' interest and engagement. When discussing planning for DAP online instruction, teachers mentioned focusing on students' developmental levels, not their age. Teachers also discuss planning around students' interests. Teachers used a variety of online learning programs such as RAZ Kids, Reading A to Z, EPIC

books, Alexia, Phoenix, Red Bird, Brand Camp, Renaissance, and Accelerate Reader to facilitate developmentally appropriate student activities. Teachers used Google Classroom, Zoom, DOJO, and Canvas to facilitate online learning activities for pre-K and kindergarten students. Teachers shared that when learning is fun and exciting for students, students will engage in activities.

Theme 2 was that teachers used collaborative teaching teams. Eight participants described using collaborative teaching teams to plan developmentally appropriate learning activities for pre-K and kindergarten students. Most teachers collaborated with fellow teachers, other schools, parents, and community members. Teachers collaborated utilizing in-person, online, and hybrid learning environments to provide online instruction to pre-K and kindergarten students. Collaborative teaching teams were helpful for teachers when providing quality DAP online instruction.

Theme 3 and Theme 4 answer RQ2. Theme 3 was that teachers need more professional development in online instruction and technology. Teachers had various years of experience using technology with pre-K and kindergarten students. Teachers used online learning programs like Google Meet and Zoom but received little training. Some teachers discussed using the Creative Curriculum and TOOLS of the Mind curriculum; however, the curriculums are not intended for online instruction. Teachers agreed they needed more professional development in online instruction and using technology with pre-K and kindergarten students.

Theme 4 was that teachers need support with online instruction from parents and administration. Most teachers shared that they received no support from parents, while

some teachers had supportive parents. Most teachers did not receive any support from their administration, while a few teachers had a supportive administration. Over half of the teachers did not receive support from parents or the administration, while one had supportive parents and administration. Teachers also lacked quality internet, technology devices, and resources.

Chapter 5 contains an interpretation of the findings with a discussion of how this study's results contribute to addressing the gap in the literature on quality DAP online instruction. I discuss the implications of the study. The research limitations, recommendations for additional research, and the conclusion are included in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

I conducted a basic qualitative study to explore pre-K and kindergarten teachers' perspectives on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believe they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. I conducted semistructured interviews via Zoom with 10 early childhood teachers. Exploring these teachers' perspectives assisted in determining how they view implementing DAP online instruction to pre-K and kindergarten students during the COVID-19 pandemic. Four themes emerged from the data analysis: (a) teachers plan developmentally appropriate fun and engaging individualized learning activities, (b) teachers use collaborative teaching teams, (c) teachers need more professional development in online instruction and technology, and (d) teachers need support with online instruction from parents and administration.

Interpretation of the Findings

I asked 10 early childhood teachers 10 interview questions regarding their perspective on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believed they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. Saldaña's 2016 data analysis method was used for this study, and four themes emerged during this process. The findings suggested that teachers plan fun and engaging developmentally appropriate individualized learning activities to enhance the growth and development of pre-K and kindergarten students. Pre-K and kindergarten teachers use

collaborative teaching teams during the COVID-19 pandemic. However, teachers expressed the need for more professional development using online instruction and technology with pre-K and kindergarten students. Finally, teachers shared that they need more support from parents and administration to provide quality DAP online instruction to students.

I evaluated and interpreted findings using the research literature from 2019 through 2024 and the conceptual framework consisting of DAP and PTD theories. The DAP theory contains six principles teachers can use to provide pre-K and kindergarten students with quality learning environments. The six principles are as follows: (a) creating a caring community; (b) engaging in partnerships with families and community connections; (c) observing, recording, and evaluating student's development and learning; (d) teaching to increase each student's development and learning; (e) applying a curriculum that is engaging to achieve goals; and (f) displaying professionalism as an early childhood teacher (NAEYC, 2020a). The PTD theory contains the following principles: content creation, creativity, communication, collaboration, conduct, and community building (Bers, 2007). I conducted semistructured interviews with 10 early childhood teachers on how DAP was implemented in online instruction during the COVID-19 pandemic and what they believed they needed to improve their use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones. Interview responses indicated that teachers plan fun and engaging developmentally appropriate learning activities. Pre-K and kindergarten teachers use collaborative teaching teams to provide pre-K and kindergarten students

with online instruction during the COVID-19 pandemic. However, teachers need more professional development using online instruction and technology with students.

Teachers also need more support from parents and administration to provide quality DAP online instruction to pre-K and kindergarten students. My interpretation of the findings aligns with the conceptual framework and the literature review.

Theme 1: Teachers Plan Developmentally Appropriate Fun and Engaging Individualized Learning Activities

The participants shared their perspectives on planning developmentally appropriate fun and engaging individualized learning activities that support pre-K and kindergarten students' growth and developmental milestones. Participants provided their definitions of DAP and explained how they used the principles of DAP in online instruction. Some participants had problems maintaining students' interest and engagement. Participants used online learning programs such as Zoom, YouTube, DOJO, and Google Meet to provide students with online instruction during the COVID-19 pandemic.

DAP and Individualized Instruction

The DAP principles focus on teaching to increase students' development and learning and applying an engaging curriculum to achieve goals (NAEYC, 2020a). NAEYC's *Guidelines for Developmentally Appropriate Practice in Action: Using Knowledge of Child Development and Learning in Context* is a part of the framework used for this study. The participants in this study defined DAP as engaging, hands-on, planned, individualized learning activities based on a student's needs and interests to

enhance their growth and developmental milestones. Participant A3 stated, “So my definition of developmentally appropriate practice is basically gearing all activities and interactions with children based on their developmental level. Not their age or their understanding of things. Adapting everything individually for the child based on their needs.” Teachers providing quality DAP online instruction to pre-K and kindergarten students individualized learning activities that enhance their growth and developmental milestones (Ethridge et al., 2022; Thompson & Stanković-Ramirez, 2021). The Fred Rogers Center (2012) stated that quality DAP instruction with technology extends pre-K and kindergarten students’ growth and developmental milestones by including hands-on, collaborative, and individualized quality learning environments. Most of the participants in the study discussed planning online learning activities based on student's developmental levels. Teachers should plan online student activities based on their growth and development when using technology (Fan & Elliot, 2022; Varela & Fedynich, 2021; Zecca, 2021).

The participants discussed how they used the DAP principles to provide individualized online learning activities for pre-K and kindergarten students based on the student's development. The DAP theory suggests that early childhood teachers provide responsible and intentional online learning activities to enhance pre-K and kindergarten students’ growth and development (NAEYC, 2020ab; Thompson & Stanković-Ramirez, 2021). Participants in this study stated that they adapted learning activities in DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones during the COVID-19 pandemic. DAP teaching strategies can be modified to

meet the needs of a diverse population of pre-K and kindergarten students (Al Ghazali, 2020; Behnamnia et al., 2022; Taylor & Boyer, 2020).

The participants in the study claimed that their schools provided students with laptops and hotspots to encourage participation in online learning. Participants can provide quality DAP online instruction with technology that encourages pre-K and kindergarten students to engage in learner-centered activities (Al Ghazali, 2021; Buckley-Marudas & Rose, 2020; Strawhacker et al., 2020; Wan et al., 2020). Quality DAP online instruction enhanced the growth and development of a diverse population of pre-K and kindergarten students with individualized and engaging learning activities (Al Ghazali, 2020; Behnamnia et al., 2022; Ivanova et al., 2020). Some participants in this study saw progression in their student's growth and developmental milestones during the COVID-19 pandemic.

Fun and Engaging Learning Activities

Most of the participants in this study provided students with various learning modalities and individualized activities such as books, manipulatives, handouts, and art supplies to enhance pre-K and kindergarten students' growth and developmental milestones. Pre-K and kindergarten students learn best in an engaging, collaborative, developmentally appropriate learning environment where teachers provide a variety of learning modalities to enhance the growth and development of pre-K and kindergarten students (Ethridge et al., 2022; Infurna, 2020; NAEYC, 2020a; Strawhacker & Bers, 2018). Participants discussed providing pre-K and kindergarten students with various activities using hands-on learning materials. Participant A2 shared, "So we came up with

the idea of making sure that when we taught math lessons, that the students had the materials that they needed but also that they actually had the hands on tools to manipulate.” They conducted small groups, letter games, number games, scavenger hunts, and other online learning programs to increase students' growth and developmental milestones using DAP online instruction during the COVID-19 pandemic.

Early childhood teachers who provide fun and engaging learning experiences intentionally enhance pre-K and kindergarten students' growth and developmental milestones (Ford et al., 2020; Taylor, 2020; Taylor & Boyer, 2020). Some participants in this study discussed using online learning programs such as Alexia, Brand Camp, RAZ KIDZ, and Accelerate Reader to facilitate developmentally appropriate student activities. Electronic Blocks, KIBO Makerspace, STEM, and Scratch Jr. followed the same ideology as Turtle LOGO, which encourages collaborative, engaging, online learning activities using robotics and technology with a diverse population of pre-K and kindergarten students (Albo-Canals et al., 2018; Bers, 2017; Bers et al., 2019; Strawhacker & Bers, 2018; Strawhacker et al., 2018). Participants in this study used other online learning activities to support students' growth and developmental milestones during the COVID-19 pandemic. Teachers must provide engaging learning activities to enhance pre-K and kindergarten students' growth and developmental milestones (Behnamnia et al., 2022; Giusti & Bombieri, 2020; NAEYC, 2020a). The participants in this study planned fun and engaging learning activities that supported pre-K and kindergarten students' growth and developmental milestones; however, student's lack of participation hindered their development. Project-based is an alternative assessment

teachers can use when providing online instruction (Adeniyi et al., 2024). Low participation from students was a concern when using traditional assessments to evaluate the growth and development of students during the COVID-19 pandemic (Thomas et al., 2022). Most participants in this study used fun and engaging activities to evaluate students' growth and developmental milestones during the COVID-19 pandemic while using formal and informal assessments. Formative, summative, and interactive assessments are DAP online assessments that early childhood teachers use to plan and implement developmental goals and objectives based on pre-K and kindergarten students' developmental milestones (Hardiyanti et al., 2022; Morgan, 2020; Thomas et al., 2022).

Some participants in this study used the Creative Curriculum and Tools of the Mind curriculum to facilitate online student learning activities; however, the curriculums were not intended for online instruction. Participants must apply an engaging curriculum with online instruction to achieve students' developmental goals (NAEYC, 2020a). Researchers agree that online learning programs such as CRISPEE, Electric Blocks, and STEM provide an online curriculum or learning program that enhances pre-K and kindergarten students' metacognition, social, and language skills (Beers, 2021; Bers & Sullivan, 2019; Bers et al., 2018; Govind et al., 2020; Hardiyanti et al., 2022; Ivanova et al., 2020). Participants planned fun and engaging learning activities despite the challenge of not having an online curriculum and resources for pre-K and kindergarten students. Some participants in this study used CANVAS, Google Classroom, DOJO, and YouTube to provide online instruction to pre-K and kindergarten students; however, there were challenges. Teachers can use social media platforms such

as Twitter, Facebook, YouTube, Reddit, and LinkedIn to network and collaborate with other teachers to create online instructional ideas for pre-K and kindergarten students (Fan & Elliot, 2022; Varela & Fedynich, 2021).

Only a few participants from this study used technology with pre-K and kindergarten students daily before the COVID-19 pandemic. Even though the DAP theoretical strategies and PTD theory provide evidence of the benefits of using technology in the classroom of pre-K and kindergarten students, few early childhood learning institutions provide quality DAP online instruction to pre-K and kindergarten students (Bers, 2021; Korkmaz & Toraman, 2020; Lauret & Bayram-Jacobs, 2021). Some participants were not comfortable using technology with pre-K and kindergarten students. Early childhood teachers who used technology daily with pre-K and kindergarten students transitioned well to online instruction during the COVID-19 pandemic (Beers, 2021; Grooms & Child, 2021). The participants faced challenges while engaging pre-K and kindergarten students in online learning. Typically, online instruction is implemented with kindergarten and older students but not with pre-K students (Wan et al., 2020). Exposing young children to technology increases their critical and exploration skills (Fallon, 2024). The participants' challenges were a lack of student engagement and poor/lack of internet or technology. These findings are supported by the literature as student-related challenges for early childhood teachers during the COVID-19 pandemic included a lack of technology, internet connection, and engaging activities for pre-K and kindergarten (Ethridge et al., 2022; Kerker et al., 2023; Morgan, 2020). Some participants had success with engaging students, while others did not.

Theme 2: Teachers Used Collaborative Teaching Teams

The participants in this study shared their perspectives on implementing DAP in online instruction to pre-K and kindergarten students during the COVID-19 pandemic. Most participants discussed relying heavily on support from co-teachers with online instruction for pre-K and kindergarten students. Schools, homes, and the community can build a successful collaborative team to support students with online instruction (Rachael, 2024). Collaborative teaching teams were essential for teachers to provide quality DAP online instruction for pre-K and kindergarten students.

Creating collaborative teaching teams is discussed in NAEYC's principle, as well as engaging in partnerships with families and creating community connections to create a quality learning environment (NAEYC, 2020a). PTD also includes the principles of collaboration and community in a quality learning environment (Bers, 2020; Bers & Sullivan, 2019; Ivanova et al., 2020). Most participants in this study used collaborative teaching teams, while a couple worked independently to provide DAP online instruction to students. Participant A10 shared, "Well, we plan them together, she and I, and like she would take like science 1 one week, and I would do the art activity and the writing activity." The participants in this study collaborated with fellow teachers in their online learning environment. Participants shared how they would alternate weekly lessons and share online learning activities with peers. When collaborating with other teachers, teachers succeed with online instruction (Varela & Fedynich, 2021).

Participants shared feeling supported when working with fellow teachers. When teachers collaborate, they learn about different online learning tools and form supportive

partnerships with other teachers (Fan & Elliot, 2022; Varela & Fedynich, 2021; Zecca, 2021). Participants discussed their perspectives on using collaborative teaching teams to plan developmentally appropriate, fun, and engaging individualized learning activities. Co-teaching is imperative when working with dual language learners and special needs students (DeRosia et al., 2021). A participant shared how special needs students had a direct line to a co-teacher for their online learning experience. When discussing the direct line, A4 stated, “Special needs students have the direct line to the classroom, and they could text our teacher.” Collaborative teaching teams support the growth and development of a diverse population of pre-K and kindergarten students. DAP and PTD emphasize the importance of teachers forming relationships with families and the community.

The participants in this study collaborated with fellow teachers, administrators, and community members to support the growth and development of pre-K and kindergarten students. Planning time is imperative for teachers working with students in online instruction; they need time to collaborate with other teachers (Summers, 2020). The teacher inquiry program is a tool that can be used to encourage teacher collaboration (Wagner, 2022). A virtual professional community allows teachers to collaborate with other teachers to build their online instruction knowledge and expertise (Summers, 2020). The GoSTEAM program allowed teachers to collaborate and support pre-K and kindergarten growth and development (Ro et al., 2021). When teachers collaborate, in-person or virtually, they create a support system to enhance students' growth and development.

Participants shared how they collaborated with parents with the support of their colleagues to provide parents with additional support and resources. Collaboration between teachers and parents benefits students during online instruction (Beatriks et al., 2024). Teachers and parents must work together for students to be successful with online learning (Nwangwu et al., 2024). A lack of teacher and parent collaboration can hinder the growth and development of pre-K and kindergarten students (Murphy, 2024). Teachers collaborating with parents, fellow teachers, and community members ensure pre-K and kindergarten students succeed in online learning.

Theme 3: Teachers Need More Professional Development in Online Instruction and Technology

Participants in this study discussed what they needed to support their use of DAP online instruction, and they agreed that more professional development in online instruction and technology is needed. These needs were also confirmed in the literature stating that early childhood teachers were required to use DAP in online instruction with limited resources and without proper training and support on quality DAP online instruction, causing delays in pre-K and kindergarten students' growth and development (Atabey, 2021; Cade et al., 2022; Ethridge et al., 2022; Infurna, 2020; Lauret & Bayram-Jacobs, 2021; Morgan, 2020). Early childhood teachers' lack of training on quality DAP online instruction hindered pre-K and kindergarten students' growth and developmental milestones (Cade et al., 2022; McKenna et al., 2022). The participants in this study had technology experiences with pre-K and kindergarten students, varying from 6 to 35 years; however, only some teachers utilized technology with pre-K and kindergarten students

daily. Most participants described needing more professional development in online learning activities, resources, and training on using technology with students. Early childhood teachers lacked training and professional development on quality DAP online instruction, online curricula, policies, and procedures (Al Ghazali, 2021; Infurna, 2021; Kwatra, 2021; Lauret & Bayram-Jacobs, 2021; McQuirter, 2020; Morgan, 2020). Professional development opportunities on best teaching practices are imperative to ensure that early childhood teachers provide quality learning experiences for pre-K and kindergarten students during online instruction (Infurna, 2021).

Early childhood teachers had little to no training on best teaching practices for online instruction (Buckley-Marudas et al., 2020). The participants in the study shared that there was a lack of training in online learning teaching strategies for pre-K and kindergarten students, and they often conducted research for online learning activities. Teachers' lack of training may have delayed pre-K and kindergarten students' academic growth and developmental milestones (Korkmaz & Toraman, 2020). Some participants were concerned about their students' development due to the lack of online learning training received during the COVID-19 pandemic. Some participants discussed using the Creative Curriculum and TOOLS of the MIND curriculum; however, the curriculums were not intended for online instruction. Teachers need professional development or training in DAP online instruction with technology that involves pre-K and kindergarten students (Al Ghazali, 2021; Atabey, 2021; Wan et al., 2020). Few participants received training on CANVAS, Alexia, Phoenix, Red Bird, Brand Camp, Renaissance, Accelerate Reader, RAZ Kids, Brand Camp, and Zoom during the COVID-19 pandemic; however,

the remaining participants did not receive training and needed training to provide quality DAP online instruction. Teachers must feel comfortable with implementing technology with pre-K and kindergarten students. A few participants felt uncomfortable implementing online instruction for pre-K and kindergarten students, and one stated that she does not use technology in the classroom. Early childhood teachers' lack of familiarity with technology caused teachers to display a bias toward implementing quality DAP online instruction (McQuirter, 2020; Morgan, 2020). Numerous teachers displayed a negative attitude or bias toward implementing online instruction because of their lack of experience with using technology in the classroom (Ford et al., 2021; Gözümlü et al., 2022; McQuirter, 2020; Thompson & Stanković-Ramirez, 2021; Wan et al., 2020).

Participants gave their interpretation of the online learning theory PTD, and all said they did not know anything about it. Participant A2 shared, "I'm not too sure exactly what you mean on that, but I can kind of give what I think it means." PTD and DAP theory provide pre-K and kindergarten students with quality, engaging DAP online learning programs (Bers, 2020; Bers & Sullivan, 2019; Bers et al., 2019). Bers's (2021) PTD theory focuses on strategies to improve early childhood teachers' use of quality DAP online instruction to enhance pre-K and kindergarten students' growth and developmental milestones.

Participant A7 shared, "But I think yeah, PD and some trainings on ideas of things that we could do different." There is limited research on PTD, quality DAP online instruction for pre-K and kindergarten students, and early childhood teachers' perspectives on implementing quality DAP online instruction (Bers, 2021; Lauret &

Bayram-Jacobs, 2021). Early childhood teachers' lack of experience or bias toward online instruction and technology reduced the quality of instruction that pre-K and kindergarten students received (McQuirter, 2020). Early childhood teachers were unprepared to transition from in-person to online instruction during the COVID-19 pandemic and faced challenges using DAP in online instruction due to a lack of training, limited resources, planning time, and support in implementing quality DAP online instruction (Ford et al., 2021; Kwatra, 2020; Morgan, 2020; Steed et al., 2022). Participants indicated they needed more professional development in online instruction and using technology with pre-K and kindergarten students, and because of this, they faced challenges when implementing DAP online instruction for pre-K and kindergarten students.

Theme 4: Teachers Need Support With Online Instruction From Parents and Administration

The participants in this study shared that they need support from parents and administration to implement DAP online instruction to pre-K and kindergarten students. Early childhood teachers received no support from their administrators during the transition to online instruction; therefore, the teachers could not support the growth and development of pre-K and kindergarten students (Ethridge et al., 2022; Infurna, 2020; McKenna et al., 2022). A lack of adult supervision hindered pre-K and kindergarten students' interactions during online instruction (Ford et al., 2021). The lack of quality technological devices, reliable internet, and resources hinders teachers from providing quality DAP online instruction to pre-K and kindergarten students.

The participants in the study discussed their perspectives on a lack of parent support with DAP online instruction during the COVID-19 pandemic. Eight participants from the study shared that they did not receive any support from parents in assisting students with online activities. Seven participants received no support or training in implementing DAP online instruction from their administration. Six participants from the study did not receive support from parents or the administration. Only one participant from the study had supportive parents and administration.

Parent Support

According to study participants, a lack of parent support was shared when discussing what teachers needed to implement quality DAP online instruction to pre-K and kindergarten students. Thomas et al. (2022) reported scheduling conflicts with parents as a concern of teachers during the COVID-19 pandemic. Participants shared some reasons for the lack of parental involvement, including disappearing, oversleeping, being late, being reluctant to online learning, not having internet access, and lacking technological devices. When describing parent support, Participant A9 stated, “Like I said, a lot of times, a lot of them did not show up, but the ones that did, I scheduled a Zoom Meetings.” These findings are similar to research findings on that early childhood teachers dealt with pre-K and kindergarten students not having adult supervision, which hindered student engagement during online learning instruction (Kerker et al., 2023; Strawhacker et al., 2020; Wan et al., 2020). Participants stated that parents were given the school's expectations and requirements for their students' participation, but it was hard for teachers to track whether the online activity was completed. Participants described

needing more parental involvement with pre-K and kindergarten students during online learning activities.

Teachers must encourage parent involvement because of the lack of face-to-face interaction (Chen & Rivera-Vernazza, 2023). Participants discussed creating handouts and providing books for families without internet or devices. Some participants who lived in rural areas would deliver students supplies and resources during the COVID-19 pandemic. Some participants had office hours pick-up times for parents to obtain online learning materials for their pre-K and kindergarten students. One participant felt that parents did not understand the importance of preschool. A study by Stites et al. (2021) confirmed that parents feel online instruction takes too much time. Some participants stated that parents worked, and getting their students online and completing activities was hard. Due to parents working, the participants in the study shared that other adults would step in to support students; however, the adults' lack of supervision or technology ability hindered student's engagement. The participants shared that parents use grandparents or other adults to assist their students with online instruction during the COVID-19 pandemic; however, students experienced distractions in those learning environments during live sessions. Four participants from the study discussed that parents did not have reliable internet or technology devices, contributing to their lack of participation. The lack of parent support continued challenging participants when implementing quality DAP online instruction for pre-K and kindergarten students. Only three participants in the study had consistent parent support with online instruction with pre-K and kindergarten students during the COVID-19 pandemic.

Administration Support

Participants discussed the need for support from their administration to implement quality DAP online instruction for pre-K and kindergarten students during the COVID-19 pandemic. Early childhood administrators created policies for online instruction based on state and federally required health and safety guidelines (Ford et al., 2021; McKenna et al., 2022; Steed et al., 202). Some participants discussed receiving little to no support from their administrators on online learning policies or expectations for pre-K and kindergarten students. When discussing support provided by the administration, participant A5 stated, “Sure, can I just say 0?” One participant stated that she received training on CANVAS after the school year started.

When the administration did not support teachers, the participants shared that other teachers supported them. Participants often researched their lesson activities and ensured the learning content was developmentally appropriate for pre-K and kindergarten students. One teacher from the study stated that she never met her administration in person, and their only contact was through Zoom. A participant stated that she needed the administration to buy into technology. The lack of support that the participants received from their administration created challenges for the early childhood teacher participants. A couple of those challenges were pre-K and kindergarten students’ lack of internet and technological devices.

Participants discussed experiencing a lack of technological devices, internet connection, and resources that affected the quality of DAP online instruction for pre-K and kindergarten students. Early childhood teachers dealt with a lack of quality internet

and technology during the COVID-19 pandemic (Ethridge et al., 2022; Kerker et al., 2023; Morgan, 2020). A participant discussed having a poor connection; when the internet lost connection, students did not return. Another participant stated that the internet would not connect, buffer, and cut off. When discussing technology issues, Participant A4 stated, “These children at 5 years old have not been trained to use a computer or working remotely, so if the internet went down, we had to learn other mechanisms to quickly help each child like in that classroom.”

These findings are similar to research findings on early childhood learning institutions that did not have adequate policies, resources, or materials to encourage quality DAP online instruction from early childhood teachers due to a lack of funding, regulations, and technological devices (Hardiyanti et al., 2022; Korkmaz & Toraman, 2020; McKenna et al., 2022; Steed et al., 2022). Two participants discussed that their school district did not provide pre-K and kindergarten students with technological devices, making it difficult for students to participate in online instruction. One participant discussed not providing students with hotspots or technological devices. Another participant stated she needs technology to be up to par. The lack of reliable internet and technological devices hindered participants from providing quality DAP online instruction to pre-K and kindergarten students.

The lack of support from early childhood administrators caused the teachers to be apprehensive about implementing quality DAP online instruction (Cade et al., 2022; Grooms & Childs, 2021; Infurna, 2020). The lack of administrative support caused some participants in the study to be uncomfortable with providing quality DAP online

instruction to pre-K and kindergarten students. Parent and administrator support is needed to provide pre-K and kindergarten students with quality DAP online learning.

Limitations of the Study

I anticipated limitations while conducting this study; the first was displaying biases. As an education coordinator, I have experience with DAP philosophies, strategies, and quality instruction. I only recruited from the Walden Participant Pool and early childhood social media groups to solicit state-certified pre-K and kindergarten teachers from the United States with at least 3 years of teaching experience. A limitation of this study was obtaining enough participants to share their perspectives on DAP and PTD online instruction to attain data saturation. Early childhood teachers dropped out of the study due to time constraints or other obligations. Having details about interviews and providing participants with information such as date, time, and location allowed them to choose if they wanted to accept or decline the offer to participate in my study.

Biases can influence research; however, reflexive or transparent authors reduce bias during a study (Burkholder et al., 2019). I kept a reflective journal to document my feelings and thoughts during the data collection to address bias. When recording and analyzing, I consistently acknowledged my biases, feelings, and opinions in my reflective journal. Member checking ensured that the findings reflected the participants' experiences and perspectives. I used data saturation, discrepant findings, and peer debriefers to confirm the accuracy of the data analysis. No discrepant cases were found during this study.

Recommendations

Considering the participants' perspectives on how DAP online instruction was implemented during the COVID-19 pandemic and what they believe they need to improve their use of quality DAP online instruction; I recommend additional research on promoting a technology-enriched learning environment for pre-K and kindergarten students. There is still some resistance to integrating technology into early childhood education because the educational world has not yet agreed upon using technology for pre-K students (Behnamnia et al., 2022). KIBO, Makerspace, and Scratch Jr. online learning programs engage pre-K and kindergarten students in activities that enhance developmental milestones and provide a technology-enriched environment (Bers, 2021; Bers et al., 2019). Most teachers in this study researched, planned, and implemented various hands-on, engaging, individualized learning activities without using the above DAP online learning programs. More research on promoting a technology-enriched learning environment might support teachers in implementing fun and engaging online learning activities.

Secondly, more research is needed to support early childhood teachers' collaboration with online instruction. According to Fan and Elliot (2022), teachers can use social media platforms such as Twitter, Facebook, and LinkedIn to network and collaborate with other teachers to create online instructional ideas for pre-K and kindergarten students. The participants shared insight on collaborating with fellow teachers, administrators, and community members; however, some teachers worked alone. When teachers collaborate, they learn about different online learning tools and

form supportive partnerships with other teachers (Fan & Elliot, 2022; Varela & Fedynich, 2021; Zecca, 2021). Teachers collaborating with other teachers while using technology benefits students learning (Varela & Fedynich, 2021). Therefore, more research on the benefits of online learning collaboration among early childhood teachers may increase the availability of online learning activities for pre-K and kindergarten students.

Additional research is needed on the efficacy of DAP online instruction and technology professional development training. Researchers shared that early childhood teachers lacked training and professional development on quality DAP online instruction, online curricula, policies, and procedures (Al Ghazali, 2021; Infurna, 2021; Kwatra, 2021; Lauret & Bayram-Jacobs, 2021; McQuirter, 2020; Morgan, 2020). The teachers in this study discussed not feeling prepared and needing more training in online instruction for pre-K and kindergarten students. Many early childhood teachers had little to no training on best teaching practices for online instruction, causing a lapse in pre-K and kindergarten student's growth and development (Buckley-Marudas et al., 2020; Cade et al., 2022; Korkmaz & Toraman, 2020; McKenna et al., 2022). Early childhood teachers' lack of familiarity with technology and training caused teachers bias when implementing online instruction (Infurna, 2021; McQuirter, 2020; Morgan, 2020). Due to a lack of professional development opportunities, some teachers in this study were uncomfortable using technology. Studies exploring a better understanding of increasing efficacy may help to ensure that DAP online learning instruction professional development opportunities are helping early childhood teachers improve their use of technology with pre-K and kindergarten students.

My last recommendation for future research is how parents and administrators can support early childhood teachers with DAP online learning instructional practices. Researchers shared that early childhood teachers did not have adequate policies, resources, or materials to encourage quality DAP online instruction due to a lack of funding, regulations, and technological devices (Hardiyanti et al., 2022; Korkmaz & Toraman, 2020; McKenna et al., 2022; Steed et al., 2022). The teachers in this study discussed not having support from parents and administrators and how it affected student engagement. Early childhood teachers dealt with a lack of administration support, reliable internet connection, planning time, and adult supervision, which hindered student engagement during online learning instruction (Ethridge et al., 2022; Kerker et al., 2023; Morgan, 2020; Strawhacker et al., 2020; Wan et al., 2020). Research that provides more insight into ways parents and administrators can support early childhood teachers in quality DAP online instruction is necessary in the future due to natural disasters, pandemics, and other school-related closures.

Implications

This study may contribute to positive social change by providing early childhood stakeholders with information on implementing quality DAP online instruction from the perspectives of pre-K and kindergarten teachers. Study findings may provide information to early childhood stakeholders who want to improve their use of quality DAP online learning strategies and programs for pre-K and kindergarten students. Early childhood stakeholders can better understand the teacher's perspective regarding DAP online instruction and classroom technology to support parents, pre-K, and kindergarten

students' learning experiences. Early childhood stakeholders may also use the findings of this study to provide more DAP online professional development and training opportunities.

Based on the findings of this study, DAP online instruction may need to be expanded to include more quality learning experiences to increase pre-K and kindergarten growth and developmental milestones. The PTD and DAP theories include effective strategies for promoting a technology-enriched learning environment for early childhood teachers. The teachers in this study shared their experiences with providing DAP online instruction, discussing challenges such as lack of parent and administration support, poor internet, technological devices, online learning resources, and training. Therefore, the findings suggest that more DAP online learning policies, curriculum, training, and procedures are needed to create quality online learning environments for pre-K and kindergarten students.

Conclusion

The purpose of this basic qualitative study was to explore early childhood teachers' perspectives on implementing DAP in online instruction during the COVID-19 pandemic and what they needed to improve their use of quality DAP online instruction. The teachers in this study shared their perspectives on planning fun, engaging, individualized learning opportunities to enhance the growth and development of pre-K and kindergarten students during the COVID-19 pandemic. Teachers used a variety of hands-on, interactive, and small-group online learning activities for students. The teachers discussed how they collaborated with fellow teachers. The teacher collaboration

helped with planning fun and engaging learning activities. The teachers in this study were asked what they needed to support the use of DAP online instruction; their response was that they needed more professional development in online instruction and technology. Finally, the participants expressed the need for more support from their parents and the administration. Teachers worked extremely hard during the COVID-19 pandemic to provide quality DAP online instruction for pre-K and kindergarten students while facing numerous challenges. Encouraging teachers to provide a technology-enriched learning environment allows pre-K and kindergarten students to receive quality DAP online learning activities.

References

- Adeniyi, I. S., Al Hamad, N. M., Adewusi, O. E., Unachukwu, C. C., Osawaru, B., Chilson, O. U., & David, I. O. (2024). Reviewing online learning effectiveness during the COVID-19 pandemic: A global perspective. *International Journal of Science and Research Archive*, *11*(1), 1676–1685.
<https://doi.org/10.30574/ijrsra.2024.11.1.0282>
- Al Ghazali, F. (2020). Challenges and opportunities of fostering learner autonomy and self-access learning during the COVID-19 pandemic. *Studies in Self-Access Learning Journal*, *11*(3), 114–127. <https://doi.org/10.37237/110302>
- Albo-Canals, J., Martelo, A. B., Relkin, E., Hannon, D., Heerink, M., Heinemann, M., Leidl, K., & Bers, M. U. (2018). A Pilot Study of the KIBO robot in children with severe ASD. *International Journal of Social Robotics*, *10*(3), 371–383.
<https://doi.org/10.1007/s12369-018-0479-2>
- Aldemir, J. & Kermani, H. (2016). Integrated STEM curriculum: Improving educational outcomes for Head Start children. *Early Child Development and Care*, *187*(11), 1694–1706. <https://doi.org/10.1080/03004430.2016.1185102>
- Aslan, S., Qi Li, Bonk, C. J., & Nachman, L. (2022). An overnight educational transformation: How did the pandemic turn early childhood education upside down. *Online Learning*, *26*(2), 52–77. <https://doi.org/10.24059/olj.v26i2.2748>
- Atabey, D. (2021). COVID-19 from the perspective of preschool prospective teachers: What can we do for the children? *International Journal on Social and Educational Sciences*, *3*(1), 82–94. <https://doi.org/10.46328/ijonses.76>

- Apostolidou, A. (2022). Digitally situated knowledge: Connectivism, anthropology, and epistemological pluralism. *International Journal of Educational Research*, 115, 1–11. <https://doi.org/10.1016/j.ijer.2022.102047>
- Beatriks, N. B., Putri, A. R. T., Jony, E. Y., & Indra, Y. K. (2024). Collaborations amid the Pandemic: East Nusa Tenggara preschool teachers' experiences in developing distance learning during COVID-19. *Educational and Developmental Psychologist*, 41(1), 29–38. <https://doi.org/10.1080/20590776.2023.2288850>
- Beers, C. (2021) Case study of a preschool transition: An example of building resilience in times of uncertainty, *Early Years*, 41(2-3), 275–290, <https://doi.org/10.1080/09575146.2018.1501554>
- Behnamnia, N., Kamsin, A., Ismail, M. A. B., & Hayati, S. A. (2022) A review of using digital game-based learning for preschoolers. *Journal of Computers in Education*, 1–34. <https://doi.org/10.1007/s40692-022-00240-0>
- Bers, M. U. (2007). Positive technological development: Working with computers, children, and the internet. *The Periodical of the Massachusetts Psychological Association*, 51(1), 13–19. <https://sites.bc.edu/devtech/wp-content/uploads/sites/181/2018/02/masspsych.pdf>
- Bers, M. U. (2010a). Beyond computer literacy: Supporting youth's positive development through technology. *New Directions for Youth Development*, 128, 13–23. <https://doi.org/10.1002/yd.371>
- Bers, M. U. (2010b). Issue editor's notes. *New Directions for Youth Development*, 128, 1–4. <https://doi.org/10.1002/yd.369>

- Bers, M. U. (2010c). The TangibleK robotics program: Applied computational thinking for young children. *Early Childhood Research & Practice, 12*(2), 1–19.
<https://ecrp.illinois.edu/v12n2/bers.html>
- Bers, M. U. (2017). The Seymour test: Powerful ideas in early childhood education. *International Journal of Child-Computer Interaction, 14*, 10–14.
<https://doi.org/10.1016/j.ijcci.2017.06.004>
- Bers, M. U. (2018). *Coding, playgrounds, and literacy in early childhood education: The development of KIBO robotics and ScratchJr*. IEEE Global Engineering Education Conference, 2094–2102.
<https://doi.org/10.1109/EDUCON.2018.8363498>
- Bers, M. U. (2021). Coding, robotics and socio-emotional learning: developing a palette of virtues. (English). *Pixel-Bit, Media and Education Journal, 62*, 309–322.
<https://doi.org/10.12795/pixelbit.90537>
- Bers, M. U., González-González, C., & Armas, T. M. B. (2019). Coding as a playground: Promoting positive learning experiences in childhood classrooms. *Computers & Education, 138*, 130–145. <https://doi.org/10.1016/j.compedu.2019.04.013>
- Bers, M. U., Strawhacker, A., & Vizner, M. (2018). The design of early childhood Makerspaces to support positive technological development: Two case studies. *Library Hi Tech, 36*(1), 75–96. <https://doi.org/10.1108/LHT-06-2017-0112>
- Bers, M. U., & Sullivan, A. (2019). Computer science education in early childhood: The case of ScratchJr. *Journal of Information Technology Education: Innovations in Practice, 18*, 113–138. <https://doi.org/10.28945/4437>

- Blake, S., Winsor, D., Burkett, C., & Allen, L. (2011). Developmentally appropriate technology practice: Exploring myths and perceptions of early childhood and instructional technology professionals. *Journal on School Educational Technology*, 6(3), 35–48. <https://www.proquest.com/scholarly-journals/developmentally-appropriate-technology-practice/docview/1473908775/se-2>
- Bredenkamp, S. (1992) What is “developmentally appropriate” and why is it important? *Journal of Physical Education, Recreation & Dance*, 63(6), 31–32, <https://doi.org/10.1080/07303084.1992.10606612>
- Buckley-Marudas, M., & Rose, S. (2020). Leading through a pandemic: Lessons learned from the Cleveland teaching collaborative. *English Leadership Quarterly*, 43(2), 5–8. <https://www.proquest.com/trade-journals/leading-through-pandemic-lessons-learned/docview/2456878216/se-2>
- Burkholder, G. J., Cox, K. A., Crawford, L. M., & Hitchcock, J. H. (2019). *Research Design and Methods*. SAGE Publications, Inc. <https://mbsdirect.vitalsource.com/books/9781544342375>
- Cade, J., Wardle, F., & Otter, J. (2022). Toddler and preschool teachers’ beliefs and perceptions about the use of developmentally appropriate practice. *Cogent Education*, 9(1). 1–25. <https://doi.org/10.1080/2331186X.2021.2018908>
- Charlesworth, R. (1998). Developmentally appropriate practice is for everyone. *Childhood Education*, 74(5), 274–282 <https://www.proquest.com/scholarly-journals/developmentally-appropriate-practice-is->

[everyone/docview/210387261/se-2](https://doi.org/10.1007/s10643-022-01366-7)

Chen, J. J., & Rivera-Vernazza, D. E. (2023). Communicating digitally: Building preschool teacher-parent partnerships via digital technologies during COVID-19. *Early Childhood Education Journal*, 51(7), 1189–1203.

<https://doi.org/10.1007/s10643-022-01366-7>

DeRosia, N., Donely, K., Lissman, D. C., Rosiek, J., Cartee, M., & Arbuckle, S. (2021). Collaborating to accommodate: Teacher insights about providing SPED and EL services during the COVID-19 Pandemic. *Thresholds in Education*, 44(2), 127–144.

<https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=19&sid=65cd59b5-b98a-4708-ae08-83983f0c9046%40redis>

Devetak, I., Glazar, S., A., & Vogrinc, J. (2010). The Role of Qualitative Research in Science Education. *Eurasia Journal of Mathematics, Science and Technology Education*, 6(1), 77–84. <https://doi.org/10.12973/ejmste/75229>

Ethridge, E.A., Malek-Lasater, A.D. & Kwon, KA. (2022). Fostering play through virtual teaching: Challenges, barriers, and strategies. *Early Childhood Education Journal*. 1–11 <https://doi.org/10.1007/s10643-022-01419-x>

Falloon, G. (2024). An exploration of online technoliteracy capability teaching and learning in early years classrooms. *Education and Information Technologies*, 29(1), 625–654. <https://doi.org/10.1007/s10639-023-12239-w>

Fan, Y., & Elliott, K. (2022). Sparse, pair-wise, emotion-focused interactions: Educators' networking patterns on Twitter at early pandemic. *Contemporary Educational*

Technology, 14(3), 1–17. <https://doi.org/10.30935/cedtech/12058>

Farley, K., Brock, M., & Winterbottom, C. (2018) Evidence-based practices: Providing guidance for early childhood practitioners, *Journal of Research in Childhood Education*, 32(1), 1–13, <https://doi.org/10.1080/02568543.2017.1387205>

Ford, T. G., Kwon, K. A., & Tsotsoros, J. D. (2021). Early childhood distance learning in the US during the COVID pandemic: Challenges and opportunities. *Children and Youth Services Review*, 131, 1–9.

<https://doi.org/10.1016/j.childyouth.2021.106297>

Fred Rogers Center for Early Learning and Children’s Media at Saint Vincent College. (2012). Technology and interactive media as tools in early childhood programs serving children from birth through age 8. *Spotlight on young children and technology*, 61–70 https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/position-statements/ps_technology.pdf

Giusti, T., & Bombieri, L. (2020). Learning inclusion through makerspace: a curriculum approach in Italy to share powerful ideas in a meaningful context. *The International Journal of Information and Learning Technology*, 37(3), 73–86. <https://doi.org/10.1108/IJILT-10-2019-0095>

Govind, M., Relkin, E., & Bers, M. U. (2020). Engaging children and parents to code together using the ScratchJr app. *Visitor Studies*, 23(1), 46–65. <https://doi.org/10.1080/10645578.2020.1732184>

Gözüm, A. İ. C., Metin, Ş., Uzun, H., & Karaca, N. H. (2022). Developing the teacher self-efficacy scale in the use of ICT at home for preschool distance education

during Covid-19. *Technology, Knowledge and Learning*, 1–31.

<https://doi.org/10.1007/s10758-022-09616-8>

Grooms, A. A., & Childs, J. (2021). “We need to do better by kids”: Changing routines in U.S. schools in response to COVID-19 school closures. *Journal of Education for Students Placed at Risk*, 26(2), 135–156.

<https://doi.org/10.1080/10824669.2021.1906251>

Hardiyanti, W. E., Utoyo, S., Sari, M., Mamonto, M., & Padodo, N. W. S. (2022). Digital portfolio in early childhood education during the COVID-19 pandemic: A need analysis. *Journal Pendidikan*, 7(1), 38–44. <https://doi.org/10.26740/jp.v7n1.p38-44>

Infurna, C. J. (2020). What makes a great preschool teacher? Best practices and classroom quality in an urban early childhood setting. *International Electronic Journal of Elementary Education*, 13(2), 227–239.

<https://files.eric.ed.gov/fulltext/EJ1285319.pdf>

International Society for Technology in Education. (2023a). *ISTE standards for students*.

International Society for Technology in Education

<https://www.iste.org/standards/iste-standards-for-students>

International Society for Technology in Education. (2023b). *ISTE standards for educators*. International Society for Technology in Education

<https://www.iste.org/standards/iste-standards-for-teachers>

Ivanova, A. A., Srikant, S., Sueoka, Y., Kean, H. H., Dhamala, R., O’Reilly, U. M., Bers, M. U., & Fedorenko, E. (2020). Comprehension of computer code relies primarily

on domain-general executive brain regions. *ELife*, 9.

<https://doi.org/10.7554/eLife.58906>

Jalongo, M. R. (2021). The effects of COVID-19 on early childhood education and care:

Research and resources for children, families, teachers, and teacher educators.

Early Childhood Education Journal, 49(5), 763–774.

<https://doi.org/10.1007/s10643-021-01208-y>

Kerker B. D., Rojas N. M., Dawson-McClure S, and Gonzalez C. (2023). Re-imagining

early childhood education and school readiness for children and families of color

in the time of COVID-19 and beyond. *American Journal of Health Promotion*,

37(2), 270–273. <https://doi.org/10.1177/08901171221140641c>

Korkmaz, G., & Toraman, Ç. (2020). Are we ready for the post-COVID-19 pandemic

educational practice? An investigation into what educators think as to online

learning. *International Journal of Technology in Education and Science*, 4(4),

293–309. <https://files.eric.ed.gov/fulltext/EJ1271308.pdf>

Kwatra, P. (2020). COVID-19 crisis: Preschool tackles virtual learning for kids under 5.

Business World, 1–5. [https://www.proquest.com/magazines/covid-19-crisis-PRE-](https://www.proquest.com/magazines/covid-19-crisis-PRE-K-tackles-virtual/docview/2415229169/se-2)

[K-tackles-virtual/docview/2415229169/se-2](https://www.proquest.com/magazines/covid-19-crisis-PRE-K-tackles-virtual/docview/2415229169/se-2)

Lambert, M. (2012). *A beginner's guide to doing your education research project*. United

Kingdom: SAGE Publications.

<https://mbsdirect.vitalsource.com/books/9781446289556>

Lauret, D., & Bayram-Jacobs, D. (2021). COVID-19 pandemic lockdown education: The

importance of structure in a suddenly changed learning environment. *Education*

Sciences, 11(5), 1–21. <https://doi.org/10.3390/educsci11050221>

LOGO Foundation. (2015). *LOGO history*. https://el.media.mit.edu/logo-foundation/what_is_logo/history.html

McKenna, M., Soto-Boykin, X., Cheng, K., Haynes, E., Osorio, A., & Altshuler, J. (2021). Initial development of a national survey on remote learning in early childhood during COVID-19: Establishing content validity and reporting successes and barriers. *Early Childhood Education Journal*, 49(5), 815–827. <https://doi.org/10.1007/s10643-021-01216-y>

McQuirter, R. (2020). Lessons on change: Shifting to online learning during COVID-19. *Brock Educational Journal*, 29(2), 47–51. <https://files.eric.ed.gov/fulltext/EJ1267300.pdf>

Macrides, E., Miliou, O., & Angeli, C. (2021). Programming in early childhood education: A systematic review. *International Journal of Child-Computer Interaction*. 32, 1–17. <https://doi.org/10.1016/j.ijcci.2021.100396>

Merriam, S. B. (2002). Introduction to qualitative research. *Qualitative research in practice: Examples for discussion and analysis*, 1(1), 1–17. Jossey-Bass. https://stu.westga.edu/~bthibau1/MEDT%208484-%20Baylen/introduction_to_qualitative_research/introduction_to_qualitative_research.pdf

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (Fourth edition.). Jossey-Bass, a Wiley Brand. <https://ebookcentral.proquest.com/lib/waldenu/detail.action?docID=2089475>

Moomaw, S., & Davis, J. A. (2010). STEM Comes to preschool. *Young Children*, 65(5), 12–14.

<https://eds.s.ebscohost.com/eds/pdfviewer/pdfviewer?vid=27&sid=ed449dd0-0c33-434f-bd8d-356c3f433f71%40redis>

Morgan, H. (2020). Best practices for implementing remote learning during a pandemic.

The Clearing House: A Journal of Educational Strategies Issues and Ideas, 93(3), 135–141. <https://doi.org/10.1080/00098655.2020.1751480>

Murphy, K., Giordano, K., & Deloach, T. (2024). Pre-K and kindergarten teacher perception of school readiness during the COVID-19 pandemic. *Early Childhood Education Journal*, 52(3), 551–561. <https://doi.org/10.1007/s10643-023-01462-2>

NAEYC. (2020a). *Developmentally appropriate practice: A position statement of the National Association for the education of young children.*

https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/position-statements/dap-statement_0.pdf

NAEYC. (2020b). *Professional Standards and Competencies for Early Childhood Educators.* <https://www.naeyc.org/resources/position-statements/professional-standards-competencies>

Nwangwu, E. C., Elmissaoui, T., Chukwuone, C. A., Ugwu, E. I., & Nwangwu, C. P. (2024). Stakeholders' Perception of Multimedia Technologies and Online Learning in Early Childhood Care and Education during the COVID-19 Era. *International Journal of Early Childhood Learning*, 31(1), 25–58–58.

<https://doi.org/10.18848/2327-7939/CGP/v31i01/25-58>

- Papert, S. (1980). *Mindstorms: Students, computers, and powerful ideas*. Basic Books Inc. <https://dl.acm.org/doi/pdf/10.5555/1095592>
- Parette, H. P., Quesenberry, A. C., & Blum, C. (2010). Missing the boat with technology usage in early childhood settings: A 21st century view of developmentally appropriate practice. *Early Childhood Education Journal*, 37(5), 335–343. <https://doi.org/10.1007/s10643-009-0352-x>
- Picciano, A. G. (2017). Theories and frameworks for online education: Seeking an integrated model. *Online Learning*, 21(3), 166–190. <https://files.eric.ed.gov/fulltext/EJ1154117.pdf>
- Pinto, M. S. M., & Fernandes, M. (2022). Traditional stories and the integration of programming and robotics with the KIBO robot. *Prisma Social*, 38. 37–76. <https://www.proquest.com/scholarly-journals/traditional-stories-integration-programming/docview/2708789896/se-2>
- Rachael Levy. (2024). Home-School Communication: What we have learned from the Pandemic. *Education 3-13*, 52(1), 21–32. <https://doi.org/10.1080/03004279.2023.2186972>
- Rao, A. E., Koval, J., Grossman, S., Boice, K. L., Alemdar, M., & Usselman, M. (2021). Building teacher community during a summer of crisis: STEAM professional development in 2020. *Journal of STEM Outreach*, 4(4). 1–9. <https://doi.org/10.15695/jstem/v4i4.07>
- Ravitch, S. M., & Carl, N. M. (2016). *Qualitative research: Bridging the conceptual, theoretical, and methodological*. SAGE Publication.

- Rekin, E., de Ruiter, L., & Bers, M. U. (2020). TechCheck: Development and validation of an unplugged assessment of computational thinking in early childhood education. *Journal of Science Education & Technology*, 29(4), 482–498. <https://doi.org/10.1007/s10956-020-09831-x>
- Relkin, E., de Ruiter, L. E., & Bers, M. U. (2021). Learning to code and the acquisition of computational thinking by young children. *Computers & Education*, 169, 1–15. <https://doi.org/10.1016/j.compedu.2021.104222>
- Research and Instructional Technology Services. (2023). *NYU Shanghai Digital Teaching Toolkit*. NYU Shanghai Library. https://wp.nyu.edu/shanghai-online_teaching/
- Rosen, D., & Jaruszewicz, C. (2009). Developmentally appropriate technology use and early childhood teacher education. *Journal of Early Childhood Teacher Education*, 30(2), 162–171. <https://doi.org/10.1080/10901020902886511>
- Rubin, H. J., & Rubin, I. S. (2011). *Qualitative Interviewing* (3rd ed.). SAGE Publications, Inc. <https://mbsdirect.vitalsource.com/books/9781452285863>
- Saldaña, J. (2016). *The coding manual for qualitative researchers*. (3rd Ed.). SAGE Publications. 1–300. <https://emotrab.ufba.br/wp-content/uploads/2020/09/Saldana-2013-TheCodingManualforQualitativeResearchers.pdf>
- Sanders-Smith, S. C., Olgún, A. A., & Bryan-Silva, K. (2023). Pushing through: Developing teacher identity under times of crisis. *Journal of Teacher Education*, 74(4), 359–370. <https://doi.org/10.1177/00224871221121285>

- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63–75. <https://doi.org/10.3233/EFI-2004-22201>
- Spaulding, D. T. (2014). *Program Evaluation in Practice: Core Concepts and Examples for Discussion and Analysis* (2nd ed.). Wiley Professional Development. <https://mbsdirect.vitalsource.com/books/9781118450215>
- Steed, E. A., Leech, N., Phan, N. & Benzel, E. (2022). Early childhood educators' provision of remote learning during COVID-19. *Early Childhood Research Quarterly*, 60(3), 307-318. <https://doi.org/10.1016/j.ecresq.2022.03.003>
- Stites, M. L., Sonneschein, S., & Galczyk, S. H. (2021). Preschool parents' views of distance learning during COVID-19. *Early Education and Development*, 32(7), 923–939. <https://doi.org/10.1080/10409289.2021.1930936>
- Strawhacker, A., & Bers, M. U. (2018). Promoting positive technological development in a kindergarten makerspace: A qualitative case study. *European Journal of STEM Education*, 3(3), 1–21. <https://files.eric.ed.gov/fulltext/EJ1190819.pdf>
- Strawhacker, A., Lee, M., & Bers, M. U. (2018). Teaching tools, teachers' rules: exploring the impact of teaching styles on young children's programming knowledge in ScratchJr. *International Journal of Technology & Design Education*, 28(2), 347–376. <https://doi.org/10.1007/s10798-017-9400-9>
- Strawhacker, A., Verish, C., Shaer, O., & Bers, M. U. (2020). Designing with genes in early childhood: An exploratory user study of the tangible CRISPEE technology. *International Journal of Child-Computer Interaction*, 26, 1–12.

<https://doi.org/10.1016/j.ijcci.2020.100212>

Su, J., Ng, D. T. K., Yang, W., & Li, H. (2022). Global Trends in the Research on Early Childhood Education during the COVID-19 Pandemic: A Bibliometric Analysis.

Education Sciences, 12(5), 1–20. <https://doi.org/10.3390/educsci12050331>

Summers, L. L. (2020). The right blend: SEL skills support teacher learning in person and online. *Learning Professional*, 41(4), 32–36.

[https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=10&sid=8c210cf3-4d43-4119-9c75-](https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=10&sid=8c210cf3-4d43-4119-9c75-ec8839c9dd9e%40redishttps://doi.org/https://learningforward.org/journal/turning-to-technology/the-right-blend/)

[ec8839c9dd9e%40redishttps://doi.org/https://learningforward.org/journal/turning-to-technology/the-right-blend/](https://doi.org/https://learningforward.org/journal/turning-to-technology/the-right-blend/)

Taylor, M. E., & Boyer, W. (2020). Play-based learning: Evidence-based research to improve children’s learning experiences in the kindergarten classroom. *Early Childhood Education Journal*, 48(2), 127–133. [https://doi.org/10.1007/s10643-](https://doi.org/10.1007/s10643-019-00989-7)

[019-00989-7](https://doi.org/10.1007/s10643-019-00989-7)

Thomas, L. J. G., Lee, M. G., Todd, C. S., Lynch, K., Loeb, S., McConnell, S., & Carlis,

L. (2022). Navigating Virtual Delivery of Assessments for Head Start Children During the COVID-19 Pandemic. *Journal of Early Intervention*, 44(2), 151–167.

<https://doi.org/10.1177/10538151221085942>

Thompson, J., & Stanković-Ramirez, Z. (2021). What early childhood educators know about developmentally appropriate practice. *Phi Delta Kappan*, 103(2), 20–23.

<https://doi.org/10.1177/00317217211051138>

Unahalekhaka, A., & Bers, M. U. (2021). Taking coding home: Analysis of ScratchJr

- usage in home and school settings. *Educational Technology Research and Development*, 69(3), 1579–1598. <https://doi.org/10.1007/s11423-021-10011-w>
- Vaala, S. E. (2012). Review of designing digital experiences for positive youth development: From playpen to playground. *Journal of Children and Media*, 6(3), 400–403. <https://doi.org/10.1080/17482798.2012.697660>
- Varela, D. G., & Fedynich, L. C. (2021). Teaching from a social distance: Teacher experiences in the age of COVID-19. *Research in Higher Education Journal*, 39, 1–20. <https://files.eric.ed.gov/fulltext/EJ1293887.pdf>
- Wagner, C. J. (2021). PK-5 teacher perspectives on the design of remote teaching: Pedagogies and support structures to sustain student learning online. *Journal of Research on Technology in Education*, 54(1), 132–147. <https://doi.org/10.1080/15391523.2021.1888340>
- Wan, Z. H., Jiang, Y., & Zhan, Y. (2020). STEM education in early childhood: A review of empirical studies. *Early Education and Development*, 7, 940–962. <https://doi.org/10.1080/10409289.2020.1814986>
- Weller, S. C., Vickers, B., Bernard, H. R., Blackburn, A. M., Borgatti, S., Gravlee, C. C., & Johnson, J. C. (2018). Open-ended interview questions and saturation. *PLoS ONE*, 13(6), 1–18. <https://doi.org/10.1371/journal.pone.0198606>
- Worker, S. (2014). Bers's theory of positive technological development. *Journal of Youth Development*, 9(1), 170–174. <https://doi.org/10.5195/jyd.2014.80>
- Wyeth, P., & Purchase, H. (2002). Designing technology for children: Moving from the computer into the physical world with electronic blocks. *Information Technology*

in Childhood Education Annual, 1, 219–244.

<http://www.learntechlib.org/p/10767/>

Zecca, L. (2021). Distance educational links: A qualitative study on the perception of kindergarten teachers. *Journal of E-Learning & Knowledge Society, 17(3)*, 127–134. <https://doi.org/10.20368/1971-8829/1135563>

Appendix A: Interview Protocol Guide

Interviewee: _____ Location: _____

Date: _____ Time: _____

ECLI: _____ Grade level: _____

There is a new study about the quality of developmentally appropriate practices (DAP) online instruction strategies pre-K and kindergarten teachers used to enhance the growth and development of pre-K and kindergarten students during the COVID-19 pandemic. For this study, you are invited to describe your experiences implementing DAP in online instruction to Pre-K and Kindergarten students during the COVID-19 pandemic; the results of this study may contribute to positive social change by providing early childhood stakeholders with information on early childhood teachers' perspectives of DAP in online instruction and resources needed to improve their use of quality DAP online instruction. The results of this study may contain information that could benefit society by providing early childhood stakeholders with information on early childhood teachers' perspectives of DAP in online instruction and resources needed to improve their use of quality DAP online instruction. I aim to understand quality DAP online instructional strategies that can enhance pre-K and kindergarten students' growth and developmental milestones.

You have been identified as someone with a great deal of information to share about the perspectives of DAP in online instructional strategies that enhance pre-K and kindergarten students' growth and developmental milestones. Your participation in this interview is voluntary. This means that I will respect your decision of whether or not you want to participate. If you decide to participate now, you can change your mind later. If you feel uncomfortable during the interview, you may stop anytime. You may skip any questions that you feel are too personal. I do not intend to inflict any harm. This audio-only recorded interview is scheduled to last about 30 to 60 minutes.

Introduction and Background Information: Thank you for volunteering to share your insights and experiences concerning DAP in online instruction for pre-K and kindergarten students' growth and developmental milestones. I want to begin by asking you some background questions to get to know you better.

A. Participant's Background

What is your experience level with using technology with pre-K/kindergarten students?

What professional development on utilizing technology with pre-K/kindergarten students did you attend/receive?

What are your teaching credentials?

How long have you been a pre-K/kindergarten teacher, and in which state are you certified to teach?

Interview Questions:

- 1.) What is your definition of developmentally appropriate practice (DAP)? (RQ1)
- 2.) How did you implement DAP in your online instruction? (RQ1)
- 3.) What information/knowledge do you have on positive technology development (PTD)? (RQ1)
- 4.) How did you plan and implement developmentally appropriate online learning activities for pre-K/kindergarten students' growth and developmental milestones during the COVID-19 pandemic? (RQ1)
- 5.) How did you assess developmentally appropriate online learning activities for pre-K/kindergarten students' growth and developmental milestones during the COVID-19 pandemic? (RQ1)
- 6.) What challenges did you face with implementing DAP online instruction? (RQ2)
- 7.) What success did you have with implementing DAP online instruction? (RQ2)
- 8.) What type of support did you get from your school administration to assist you in implementing quality DAP online instruction? (RQ2)
- 9.) What type of support did you get from parents to ensure their child met their growth and developmental milestones? (RQ2)
- 10.) What do you need to support you with implementing DAP in online instruction? (RQ2)

Appendix B: Interview Questions for Participants

1. What is your definition of developmentally appropriate practice (DAP)? (RQ1)
2. How did you implement DAP in your online instruction? (RQ1)
3. What information/knowledge do you have on Positive Technology Development (PTD)? (RQ1)
4. How did you plan and implement developmentally appropriate online learning activities for pre-K/kindergarten students' growth and developmental milestones during the COVID-19 pandemic? (RQ1)
5. How did you assess developmentally appropriate online learning activities for pre-K/kindergarten students' growth and developmental milestones during the COVID-19 pandemic? (RQ1)
6. What challenges did you face with implementing DAP online instruction? (RQ2)
7. What success did you have with implementing DAP online instruction? (RQ2)
8. What type of support did you get from your school administration to assist you in implementing quality DAP online instruction? (RQ2)
9. What type of support did you get from parents to ensure their child met their growth and developmental milestones? (RQ2)
10. What do you need to support you with implementing DAP in online instruction? (RQ2)

Potential follow-up questions that I retained as I interviewed each participant:

What did you/ What do you mean by..?
Can you please tell me more about?
You stated.

Please tell me an example of when that is. Worked/did not work.

Appendix C: Coding Table

Themes	Categories	Codes
(1) Teachers Planned Developmentally Appropriate Fun and Engaging Individualized Learning Activities	Fun and Engaging Learning Activities	Teacher defines DAP, Social/Individualized learning activities, Engaging online learning activities
	Various Instruction Techniques	Hands-on learning activities, Physical activities, Language activities, Flexible learning instruction
	Assessing Students Development	In-person assessments, Online assessments, Effective curriculum and assessments, Informal Assessments, Formal Assessment
(2) Teachers Used Collaborative Teaching Teams	Collaborative Teaching Teams	Collaboration, Teaching teams, Community members, Co-teachers, Parent/Administration collaboration
	Students and Online Learning	Mixed-aged classrooms, Learning material not appropriate, Learning programs, Students and technology, Teachers provide breaks
	Students Developmental Levels	Student developmental levels, Student interests, Used data for activities, Developmental progress, Developmental domains
(3) Teachers Need More Professional Development in Online Instruction and Technology	Teachers need Technology Training	Online training, Professional development, Technology training, Hands-on training, Individual training
	Teacher Challenges and Obstacles	Online instruction tools, Effective curriculum, Lack of resources, Structured learning environment, Lack of policy/ procedures
(4) Teachers Need Support With Online Instruction from Parents and Administration	Parent Involvement	No parent support, parents frustrated, parent training, parent expectations, parent support
	Lack of Support from Administration	No admin support, Administration/Teacher disconnect, Teachers need support, Lack of planning, Lack of expectations
	Technology and Resource Issues	Poor internet quality/connection, No technology devices, Two internet providers, technology issues, Families limited internet access