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Transformational Leadership and Information and Communication Technologies (ICTs): A Case Study of Primary Teachers at an Urban School in Bogotá, Colombia

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Doctor of Education in Organizational Leadership

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by

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Dedication

I dedicate my dissertation work to the many family members who have supported me throughout this process. To my husband, Dane, who has been my rock throughout the doctoral program and tried his best to make sure I didn't give up when I wanted to. To my in-laws Denise and Ralph, for the many hours of proofreading and listening to me vent. To my children, Elijah, Nyla, and Dani, whom I thank for the personal time they sacrificed when I had to do work, conduct research, and write. To my sister Sherri, whom I thank for the many times she babysat the kids to allow me to get my schoolwork completed. I'd also like to dedicate my work to my best friends Aleysia, who passed recently; Eric; Christine; and Yamila, as they were present throughout my entire doctorate program and lifted me up in times that were most needed. You all have been my cheerleaders and the best supporters until the very end.

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Abstract

The purpose of this qualitative case study was to establish if transformational leadership influenced teachers' attitudes and usage of information and communication technologies in an urban public school in Colombia. Transformational leadership components were examined to determine if school leaders exhibited transformational leadership characteristics and if their leadership style influenced teachers' attitudes and information and communication technologies usage. A convenience sample of 29 primary teachers and four school leaders participated in the study. There were 16 teachers who participated in semistructured interviews and 13 teachers who participated in a 90-minute focus group discussion. Semistructured interviews, document analysis, focus group discussion, and analytic memos were used to gather data on the scope of teachers' attitudes and use of information and communication technologies. All collected data, including document analysis, were translated from Spanish to English and used to create themes through in vivo coding and process coding. Findings confirmed that three out of four components of transformational leadership were interdependent and affected primary teachers' use of and attitudes toward information and communication technologies implementation. Findings also indicated that teachers motivated themselves and brought positive social change to this school during the pandemic. All participants desired professional development and more support.

Keywords: transformational leadership, information and communication technologies, professional development, digital divide, technology-enhanced learning, andragogy

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Chapter 1: Introduction

Developing countries have capitalized on implementing technology in schools, improving and updating teaching practices, and enhancing learning. Most institutions in developing nations rely on the aid of recycled equipment, older models, or hardware that has inadequate functionality in most cases, especially in rural and urban areas, due to the high cost of information and communication technologies (ICTs) such as computers, laptops, iPads, instructional software, and electronic textbooks (Gamboa & Londoño, 2017). On the same line of thinking, individuals with less sophisticated knowledge or training in technology were more likely to learn how to use basic system applications or opt not to utilize technology if they did not have to. As a result, several barriers affected the effective integration of ICTs in classrooms, particularly in Colombia, with the example of attitudes of teachers toward technology, leadership, and professional development.

One of the main issues centered on being digitally literate among educators and students in ICT and other core competencies in Colombia (Rojas-Rojas, 2018). The Colombian government's objectives included bringing ICTs to most of the Colombian region. Still, it had been overlooked that the occupants of these territories are "digitally illiterate" and not afforded the same opportunities as other areas (Rojas-Rojas, 2018, p. 97). Therefore, studying the challenges that primary teachers face regarding ICT use in education can help educators overcome these barriers and become efficient technology users (Bingimlas, 2008).

The usage of ICTs in the classroom was essential for offering students various opportunities to learn and adapt to using technology in this digital age. Unfortunately, teachers who lacked confidence or felt they were unprepared to use technology were the ones who did not integrate ICTs into their pedagogies (Adegbenro et al., 2017; Andoh-Baidoo et al., 2014). Wallet

(2016) provided data on how low a priority ICT integration was in many of the world's least developed countries compared to other challenges like training teachers and improving student academics. Moreover, Adegbenro et al. (2017) and Andoh-Baidoo et al. (2014) implied that teachers' attitudes influenced whether teachers utilized computers as a tool to teach their lessons. According to Adegbenro et al. (2017), research indicated that accomplishing significant usage of ICT tools in instruction could be swayed by the teachers' attitudes regarding technology. Additionally, Albugami and Ahmed (2015) stated that if teachers familiarized themselves with ICT tools, they could gain competence and more positive attitudes about the usage. This would mean that if teachers had a more optimistic mindset about ICTs, they were more likely to use them more often in their teaching (Adegbenro et al., 2017; Andoh-Baidoo et al., 2014).

Macharia and Pelser (2014) found that institutional leadership contributed to ICT distribution in the context of a developing country. Leadership style affected school climate as research indicated that when a "teachers' perception of leadership improves, he or she becomes more effective in the classroom" (Allen et al., 2015, p. 4). A recent study in Colombia at a university showed that transformational leadership style was preferred over transactional and other leadership styles. Additionally, results from the study stated that leadership was a key component in teaching and learning, specifically transformational leadership, as it fostered a supportive environment, gave constructive feedback, focused on the needs of others, and guided followers to reach their full potential (Cuadros et al., 2016). Moreover, the attitude of school leaders, such as principals, assistant principals, and other administrators at elementary and secondary schools, contributed to student achievement and teachers' beliefs and commitment (Al-Mahdy et al., 2018; Allen et al., 2015). According to Sherman (2018), technology is substantial within educational institutions. Although leadership decides on what technology is in

the classroom, teachers decide how often ICTs are used (Sherman, 2018). If school leaders fostered a transformational leadership style where they not only focused on the school's goals being met by incorporating ICTs in daily instruction but focused on teachers' needs as well, it could change how teachers utilize and view ICTs.

Tawfik et al. (2016) stated that educational technology has equity issues such as attainment gaps, inequality of educational access, and academic achievement. To the authors' argument, a discussion about educational technology's intended and unintended consequences on social equality is linked to educational attainment (Tawfik et al., 2016). Coleman (1988) stated, "Research has shown that a student's socioeconomic background is determined by parental income, education and occupations are strongly linked to educational achievement" along with race and ethnicity (pp. S98–S99). Moreover, research in educational technology has shown that there is another inequality, such as the digital divide (Sianou-Kyrgiou & Tsiplakides, 2012; Tawfik et al., 2016). The digital divide was caused by those who do not have access or knowledge on how to utilize technology and by socioeconomic status factors (Sianou-Kyrgiou & Tsiplakides, 2012; Tawfik et al., 2016). The bottom line is that teachers and students from lower socioeconomic demographics have had less access to technology, less proficiency with digital tools, and less prior knowledge based on various empirical studies (Kim et al., 2011; Ritzhaupt et al., 2013; Volman et al., 2005). Consequently, reports showed that teachers who teach in rural and urban schools or schools with many disadvantaged students showed fewer professional development opportunities, making teachers less likely to integrate technology into the curriculum even if they had access (Wei et al., 2010).

The use of ICT in classrooms is to support student learning; however, with that comes challenges for teachers who increase the use of ICT (Umugiraneza et al., 2017). Ridding the

barrier of equity and digital divides involved more than resources. Professional development was a necessity (Umugiraneza et al., 2017). Leaders played a role as they provided support to teachers and offered the resources needed to effectively utilize ICTs in the classrooms. The main issue was being digitally literate among educators and students in ICT and other core competencies in Colombia (Rojas-Rojas, 2018). The Colombian government's objectives included bringing ICTs to most of the Colombian region. Still, it has been overlooked that these territories' occupants are "digitally illiterate" and not afforded the same opportunities as other areas (Rojas-Rojas, 2018, p. 97). Therefore, the challenges that primary teachers face regarding ICT use in education could help educators overcome these barriers and become efficient technology users (Bingimlas, 2008).

Statement of the Problem

The digital divide in Colombia began with some individuals having access to the internet in schools, at home, and in the workplace, and others not (Camelo et al., 2018; Galvis, 2012). Equally, Galvis (2012) stated there had been some success with having computers in Colombian schools, even in rural and urban communities and low-income communities; however, educators were the influential component to technology's utilization in schools. School leadership encourages the usage of technology intended for instruction and learning and other facets associated with ICT (Apsorn et al., 2019). However, Haughey (2006) stated that school leaders are not automatically specialists in ICT usage and rely on staff to assist with utilizing ICT. Additionally, Rosenblit and Gros (2011) and Kisanjara et al. (2017) stated there is a lack of studies on the topic of transformational leadership and teachers' attitudes toward utilizing ICTs in developing countries like Colombia. Therefore, this case study sought to find connections between transformational leadership and teachers' attitudes toward ICT. Determining the barriers

to using ICT in teaching and learning could help teachers overcome the obstacles and integrate ICT into everyday lessons. It will also assist school leaders with ensuring that both the school's goals and teachers' needs to accomplish these objectives are met. With this information, Colombian school administrators may change leadership styles and help teachers get over their fear of technology, which, in turn, will help students in the classroom.

Purpose of the Study

Access to ICTs varies due to socioeconomic status, gender, and ethnicity (Hardesty et al., 2014; Jacob et al., 2016; Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018). Conversely, Apsorn et al. (2019) and Bautista Díaz et al. (2019) found that it is vital to have ICT leadership for teachers to be able to apply and promote innovations about ICTs (Apsorn et al., 2019; Bautista Díaz et al., 2019). In-service teachers, who have had professional development in using technology, facilitated students to be comfortable utilizing ICTs (Adegbenro et al., 2017; Andoh-Baidoo et al., 2014; Shengru et al., 2018). According to Adegbenro et al. (2017), the effective use of ICT tools in classroom instruction can be influenced by teachers' attitudes toward technology. Additionally, teachers who lacked the opportunity to develop professionally in using contemporary ICTs felt under threat (Hennessy et al., 2010; TED, 2015). Therefore, primary teachers did not want to adjust their teaching methods to integrate technology but rather adapt technology to their current practice (Camelo et al., 2018). Some teachers' beliefs about ICTs have challenged government and school efforts to implement computer technology and have deterred them from utilizing it in the classroom (Galvis, 2012).

Technology-enhanced learning, like using ICTs, improved the quality of education and can help students or learners use those critical thinking skills to conduct research, solve problems, make decisions using digital tools or resources, manage projects, and much more (J.

Lee & Choi, 2017; Rosenblit & Gros, 2011). Conversely, Stolaki and Economides (2018),

Lwoga and Komba (2015), and Allen et al. (2015) stated that the integration of ICTs contributes

to academic achievement. There was also a link between teachers' perceptions of

transformational leadership and its effect on academic achievement and ICT knowledge (Barnett,

2005; Sosa Neira et al., 2018; Stolaki & Economides, 2018).

For the purpose of this qualitative case study, semistructured interviews, document

analysis, focus groups, and analytic memos were used to gather data on the scope of teachers'

attitudes and use of ICTs. Analytic memos were used to reflect and document code choices,

coding practices, themes, concepts in the collected data, and more (Rogers, 2018; Saldaña,

2014). The case study established that transformational leadership influenced teachers' attitudes

and usage of ICTs in urban schools in Colombia. Allen et al. (2015) stated that transformational

leadership contributes to the effectiveness of a school and student achievement, as well as

teachers' perceptions of leadership and teachers' effectiveness in the classroom. Nonetheless,

Pinzón Capador and Guerrero Nieto (2018) indicated that significant constraints contributed to

the lack of technology in classrooms. Teachers needed leadership support to utilize ICTs in the

school successfully.

Research Questions

RQ1: What challenges do primary school teachers encounter when they attempt to

assimilate ICT into their lessons?

RQ2: How do primary teachers describe their experiences regarding ICT integration?

RQ3: What role does transformational leadership play in the availability of resources and

support of classroom technology implementation?

RQ4: How have teachers' attitudes changed regarding technology use with a required practice of ICTs during the COVID-19 pandemic?

Methodological Approach and Rationale

Ejimabo (2015) stated that researchers should use the qualitative method to submerge themselves methodically in the informants' lives through in-depth interviews and focus groups. To coincide with the case study's purpose and analysis, a document analysis, interviews, and a focus group were conducted using the adult learning theories andragogy and experiential learning. The andragogy and experiential theory provided a structural framework. Adult learners insist on knowing why they must learn something before beginning to obtain that knowledge or acquire the requested skill (Knowles, 1973). It is dominant in today's society revolving around teachers and leadership, as they must know why something new must be learned and for what purpose. Thus, Knowles's (1973) five assumptions under the andragogy theory helped guide the study.

The experiential learning theory transforms experiences through knowledge (D. Kolb, 1984). The experiential learning theory has two modes of viewing experiences through concrete experience and abstract conceptualization and two modes of transforming experiences through active experimentation and reflective observation (D. Kolb, 1984). According to Collins and Stockton (2018), a convincing theoretical framework can permit the examiner to disclose existing dispositions about a study and support data coding and analyses.

This case study's purpose and questions focused on experiences, feelings, and opinions. Thus, conducting semistructured interviews was appropriate since "interviews are inductive" and responses are not predetermined, and they allow participants to use "their language and provide long and detailed responses" (Leavy, 2017, p. 138). Furthermore, adult learning theories have

been used in various studies that involve investigating current challenges regarding ICT, whether it involves policies, leadership, teachers, communities, or more. Knowles's (1973) five assumptions guided the study with the interview questions that stemmed from each one.

Another data collection method was the focus group discussion. Rosenthal (2016) stated that focus groups encompass open-ended questions intended to seize participants' in-depth occurrences. Additionally, a focus group discussion was a diverse data compilation method from semistructured interviews, which provided me with data that relied on the participants' communication to convey answers to the research questions (FitzPatrick, 2019; Rosenthal, 2016). D. Kolb's (1984) experiential learning theory was used to guide the focus group discussion. The questions encompassed the four methods of the learning cycle that took experiences and transformed them.

According to Rosenthal (2016), there are six primary kinds of focus group questions. These include sensory, experiences/behaviors, opinions/values, knowledge, feelings, and background questions. Therefore, questions originated under each category of questions for focus groups. The layout of questions from each category was divided under D. Kolb's (1984) cycle to include concrete experience, abstract conceptualization, reflective observation, and active experimentation. Finally, a document analysis was used to examine policies regarding ICT integration, the Ministry of Education's guidelines for schools' usage of ICTs in instruction, and professional development for ICTs. Knowles's (1973) six suggestions were used to determine if school leadership utilized the resources and followed the required policies of ICT integration and teacher professional development. Lastly, another approach included analytic memos, as it was "reflective narratives that expanded and expounded on observations" (Saldaña & Omasta, 2018,

p. 54). The decision to include analytic memos aided in the data's trustworthiness, and it served "as first and revised drafts of theories in progress" (Saldaña & Omasta, 2018, p. 267).

Convenience sampling was applied to this case study. Convenience sampling "involves selecting participants with whom researchers have easy access" (Saldaña & Omasta, 2018, p. 96). Participants included male and female directors, primary teachers, and primary school leads and the technology specialist at a public school in an urban area in Bogotá. There were approximately 85 total potential participants. The goal was to have a minimum of 10–15 for the interviews and a minimum of 5–10 for the primary teacher focus group. The goal was exceeded, as there were 16 participants for the interviews and 13 for the focus group discussion.

Definition of Key Terms

Digital divide. The gap between individuals who have complete access to computers and the internet compared to those who do not is considered a digital divide (Merriam-Webster, 2020).

Educational technology. The definition of educational technology (ET) has evolved over the last seven decades to include encompassing a conceptual framework, learning processes, ethical practices with tech processes and resources, and theory and practice (Kurt, 2016). However, a short and recent definition defines ET as an efficient process for designing teaching or training to improve performance (Kurt, 2016).

Information and communication technologies. Information and communication technologies (ICTs) are a fundamental tool for providing support to teachers who implement differentiated instruction (Karatza, 2019). ICTs include software, hardware, computers, and any form of technology that enhances providing information and communicating (Adegbenro et al.,

2017; Bingimlas, 2008; Stolaki & Economides, 2018). In short, ICTs can deliver instruction while utilizing modern applications.

 Pedagogy. Pedagogy can be defined as a teaching practice, method, or approach to include teaching theory, teaching styles, and content delivery (Tes Editorial, 2018).

 Professional development. Concentrated training, formal education, and advanced specialized learning are considered professional development (Glossary of Education Reform, 2013).

 Student achievement. Academic content a student acquires in an indomitable amount of time is considered student achievement (Carter, 2017).

 Technology-enhanced learning. The application of technology to learning and teaching is technology-enhanced learning (TEL; Cullen, 2018).

 Transformational leadership. Transformational leadership is one of the many leadership styles. Leaders who use this type of leadership style will motivate, inspire, and support employees to innovate and produce change (Bass, 1990; White, 2018). This change will help grow and shape the future success of the school, company, or business (White, 2018). To add, transformational leaders "are willing and able to show their employees new ways of looking at old problems, to teach them to see difficulties as problems to be solved, and to emphasize rational solutions" (Bass, 1990, p. 21).

Summary and Preview of Chapter 2

 The rhetoric regarding technology-enhanced learning contends that ICT can increase student achievement, reinforce a country's obligation to promote ICT, adopt policies by governments in many countries, and allocate cash to incorporate new technologies in all educational phases (Sianou-Kyrgiou & Tsiplakides, 2012). Educators are pushed to utilize ICTs

in the classroom. However, mentors, leadership, local government, and digital literacy play a role in using ICTs in the classroom. Ensuring that there is support and adequate access to ICTs and internet connectivity appears to be a priority in schools in Bogotá, Colombia. The Ministry of Education has already been working on providing more internet connectivity in rural areas. However, there is still more research to be done in terms of teachers' digital literacy in those areas.

In the subsequent chapter, a literature review will present information on related topics of ICTs, transformational leadership, the digital divide, and teachers' utilization of ICTs. In the examination of literature, detailed considerations appeared that were fundamental for this analysis. There is a digital divide among students and teachers who reside in rural and urban areas in Colombia, where there is a disadvantage regarding access to ICTs (Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018). Although Colombia is not a developing country per se, there are areas in Colombia that are underdeveloped and disadvantaged, specifically areas encompassing the Bogotá area. Research has shown that there is a disconnect among rural and urban populations not only in developing countries but also in the United States regarding access to technology. There are areas in Bogotá, Colombia's capital, considered to be urban but categorized to strata 1–3, meaning socioeconomically poor (Guillermopreito, 2020; Jessel, 2017). Residing in areas that fall between strata 1–3 shows the disconnect many face due to living conditions; access to the internet; affordability of food, let alone technology; and much more. According to Guevara and Shields (2019), the social strata continue to sustain inequality in education by keeping public schools to the lower strata (1–3), while the higher strata pay for tuition, as those schools are all private. What has been found in the research is the lack of digital literacy among teachers and the absence of leadership support, which contributes to the lack of

ICTs being utilized in classrooms (Allen et al., 2015; Pinzón Capador & Guerrero Nieto, 2018;

Zyad, 2016). If a teacher is not motivated or interested in utilizing ICTs in their instruction, then

they will not.

Chapter 2: Literature Review

In my examination of literature, detailed considerations appeared that were fundamental for this analysis. There is a digital divide among students and teachers who reside in rural areas in Colombia. There is a disadvantage regarding access to ICTs (Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018). Colombia is not classified as a developing country; however, there are areas in Colombia that are underdeveloped and disadvantaged, specifically areas encompassing Bogotá. Research has shown a disconnect among rural and urban populations in developing countries concerning access to technology. If a teacher is not motivated or interested in utilizing ICTs in their instruction, then they will not. What was found in the research is the lack of digital literacy among teachers and support from their leadership. This contributes to the lack of ICTs being utilized in classrooms (Allen et al., 2015; Pinzón Capador & Guerrero Nieto, 2018; Zyad, 2016). According to Collins and Stockton (2018), a convincing theoretical framework can permit the examiner to disclose existing dispositions about a study and support data coding and analyses. Using a mechanism such as a tool to measure leadership's technology competency and surveying transformational leadership styles may show a connection as to why teachers do not utilize ICTs in their classrooms in Bogotá.

Literature Search Methods

The research was obtained from the library databases at Abilene Christian University (ACU) and ACU's library, specifically the One Search and ProQuest Dissertation and Thesis tool. Keywords used in the search were *ICT*, *teaching*, *education*, *Colombia*, *leadership*, *school leadership*, *attitudes*, *transformational leadership*, and more. Additionally, research was obtained from ERIC files, ResearchGate, Scientific Research, Education Week, the Organisation for Economic Co-operation and Development (OECD) website, and much more. The searches

started broad and slowly became more focused as my study became clearer. These research tools have been an essential component to home in on the topic and ensure that current statistics are provided to show the problem.

Theoretical Framework Discussion

Adults learn through different methods. Traditionally, adults stick to an approach that is friendly when learning something new, and other times, adults transform their way of thinking and adapting to learn what is needed. Merriam and Bierema (2014) indicated, "Adult learning includes the foundational work in andragogy, self-direct learning, and transformative learning, an adult's life experiences" and generates learning "as well as acts as resources for learning" (p. 104). Theories surrounding adult learning will help show how teachers and individuals in leadership positions learn and how they overcome their challenges while adapting, implementing, and acquiring new knowledge of ICTs. The selected theories include andragogy and experiential learning theory.

Andragogy

Adult learning is defined as andragogy. Knowles (1973) defined adult learning as the ability and skill of schooling adults. He considered it essential to establish the method adults learn past pedagogy involving kids. Knowles's (1973) andragogy theory outlines five assumptions about adult learners, six suggestions on placing the beliefs into practice, and seven desired outcomes from using this approach. The five assumptions about adult learners are as follows:

1. Self-concept: As adults mature, they change from being reliant on others to being self-reliant.

2. Experience: Adults gain experiences as they mature and develop, a valued apparatus

in learning.

3. Readiness to learn: Adults are more prepared to learn about their positions in society, and their priorities shift.

4. Orientation to learning: Perspectives are changed as adults learn while maturing and growing. Adults go from procrastinating to instant application and from interest to problem-solving.

5. Motivation to learn: As adults mature and grow, their motivation goes from extrinsic to intrinsic.

Knowles (1973) stated that adult learners insist on knowing why they must learn something before beginning to obtain that knowledge or acquire the requested skill. It is prevalent in today's society revolving around teachers and leadership, as they must know why something new must be learned and for what purpose. Additionally, adults learn only what they need to be promoted or pass (Knowles, 1973). Conventionally, in the United States, in selected states, if teachers obtain a master's degree and then 30 additional credits, that will increase their salary. Usually, that is a motivational factor, as the monetary value will assist them in their daily lives and career.

Most importantly, the adult learner expects to know that what they are learning is pertinent to their everyday life and goals and can keep them motivated on learning (Knowles, 1973). Notably, when grown-ups mature from child to adulthood, they are more autonomous, self-directed, and responsible. Knowles (1973) indicated that when adults develop self-concept, they also acquire a profound psychological requirement to be understood and treated well by others to accomplish self-direction. According to J. Chen (2014), self-direction occurs when learning and experiences are optimized and applied in adults' learning processes. When it comes

to expertise, adults learn mostly from their experiences, which can impact how adults learn in a classroom setting (Knowles, 1973).

According to the third assumption of readiness to learn, reality's responsibilities, situations, and adults' maturity build on their willingness to learn (Knowles, 1973). This assumption is essential for teachers and leaders to be ready and willing to acquire new knowledge and skills. When it comes to technological systems and devices, this is not always the case due to attitudes toward technology, leadership support, and resources. Conversely, the fourth assumption of orientation involves adults being life centered and determined to dedicate their energy to learning when they recognize the benefit it will have to problem solve, confront issues in their daily lives, and perform tasks (Knowles, 1973). Lastly, the fifth assumption created by Knowles (1973) is motivation, where adults are intrinsically motivated to learn, particularly when they view the benefits as enabling them to cultivate the knowledge and grow. This fifth assumption ties back to monetary value or new knowledge and skills for teachers' and leaders' careers or daily lives being a motivational factor.

Educators are fundamentally responsible for placing these expectations into practice. It falls to school leaders to ensure teachers acquire the new technical skills needed to utilize ICTs in the classroom. Knowles (1973) created six suggestions on how this can be done. His recommendations are as follows:

1. Encourage a constructive classroom atmosphere encompassing cooperative learning.
2. Explore the needs and interests of each adult learner.
3. Generate learning objectives centered on the needs and interests summarized above.
4. Build on each following part to accomplish the learning goals.
5. Collaboratively create approaches, methods, and resources for instruction.

6. Assess each pursuit and make adjustments where needed while frequently assessing the subsequent learning phases.

In conclusion, when information is relevant and useful, adult learners are more likely to retain it. This is specifically relevant during the current coronavirus (COVID-19) pandemic when teachers and school leaders were thrown into using ICTs daily. Through immediately switching to learning online from in-person instruction, teachers and school leaders have faced many challenges. Some teachers and school leaders had the training and professional development of ICTs, and others did not. Some teachers and school leaders having a mindset or negative attitude toward technology certainly did not help motivate them to learn how to utilize the ICTs used in online learning. This example shows where transformational learning comes into play, as it helps shift attitudes and transforms actions and the development of teachers and school leaders.

Experiential Learning

A portion of the andragogy process illustrates that adults accrue a rising reservoir of capability and experiences that enhance their learning as they mature (Knowles, 1973). To add, D. Kolb (1984), a theorist in experiential learning, defined experiential learning as the method where the transformation of experiences is created through knowledge. Conversely, D. Kolb (1984) indicated that knowledge derives from the transforming experience. The experiential learning model developed by D. Kolb (1984) includes two modes of taking experiences and two transforming experiences. D. Kolb's (1984) learning cycle involving four methods is defined as follows:

1. Concrete experience (CE): The learner must apply themselves fully, openly, and without bias in new experiences.

2. Abstract conceptualization (AC): The learner must create concepts that integrate their

observations into logically sound theories.

3. Reflective observation (RO): The learner must reflect on and observe their experiences from many perspectives.

4. Active experimentation (AE): The learner must use these theories to make decisions to solve problems.

Experiential learning is a practice of forming knowledge that comprises innovative pull between the four learning methods receptive to contextual requests (A. Kolb & Kolb, 2012). Nonetheless, this model implies that while individuals learn, they will also participate in every portion of the process in a cyclic manner (Merriam & Bierema, 2014).

Summary of Theories

Experience is one of the components in all three of the mentioned theories. Notably, adults need to have experiences for the information they learn to retain (J. Chen, 2014; Knowles, 1973; D. Kolb, 1984; Merriam & Bierema, 2014). Additionally, prior experiences frame what adults would like to learn in the future and relate to what they currently are learning. Subsequently, a communal thread in the theories involves initiatives that adult learners learn (Knowles, 1970; Merriam & Bierema, 2014). Naturally, the desire to acquire new skills or learn further information occurs when adult learners want to advance in their field or become up to date on new curriculums, technologies, or platforms. Finally, the last concept found in the theories described is a reflection (A. Kolb & Kolb, 2012; Merriam & Bierema, 2014).

Respectively, adult learners reflect on what and how they learned as they continue to gain knowledge. Thinking about one's learning offers concrete reflections to contemplate future happenings with education. This is extremely important as teachers and school leaders were forced to adapt to using an online platform only. This could have changed the way ICTs are

viewed and utilized now and in the future. Convincingly, adult learners need time to reflect on knowing what is being learned and how it can impact one's life; it is a need to know. The timing of the pandemic has required immediate change in the curriculum, flexibility of schools, and teachers acquiring necessary skills or learning to utilize specific ICTs. This has impacted everyone's lives, and it must be known how. Nonetheless, in short, experiences, motivation, and reflections contribute to changing how adults learn.

Literature Review

The rhetoric regarding technology-enhanced learning contends that ICT can increase student achievement, reinforcing a country's obligation to promote ICT, the policies adopted by governments in many countries, and the immense amounts of cash allocated to incorporate new technologies in all educational phases (Sianou-Kyrgiou & Tsiplakides, 2012). The Ministry of Education in Colombia worked on an initiative directed at young rural students using ICT tools. The project was Kiosko Vive Digital, which promoted the supply of ICT services in remote and rural areas of the country (Rojas-Rojas, 2018). It was intended to give internet connection to assist students with completing homework assignments and having the same access as their peers (Rojas-Rojas, 2018). On a positive note, so far, Kiosko Vive Digital's government program has given more access to 144,990 people and 63,270 organizations. Also, 278,368 teachers have been educated in ICTs, and 1,991,402 devices have been delivered (Rojas-Rojas, 2018). Negatively, the lack of updating the hardware and software has caused some ICTs to be abandoned in storage rooms (Rojas-Rojas, 2018).

According to Pinzón Capador and Guerrero Nieto (2018), teachers stated that there had been significant constraints contributing to the lack of technology integration in classrooms. The constrictions included connectivity, technological skills, infrastructure, institutional support and

feasibility, user-friendly interface, time, and students' likes and dislikes (Pinzón Capador & Guerrero Nieto, 2018). Teachers need institutional support, and students need connectivity to the internet and good infrastructure.

Implementation occurred through 20 lesson plans that were 2 hours long each. Some teachers stated that Wi-Fi was an issue in some schools because students could not access it, while logistics and technical difficulties were not anticipated in another context (Pinzón Capador & Guerrero Nieto, 2018). Moreover, one teacher stated that she did not have access to some tools and that the ones she did have access to, she had to explain step-by-step to students. Nevertheless, they still encountered some problems. This teacher also pointed out the cultural context of schools in Bogotá and how the student and teacher have mutual trust in achieving a task without worrying about students fleeing the class. Another teacher stated that digital illiteracy among her students was another facet that she had to consider and change her beliefs about. She could not assume that her students were digital natives.

Another teacher stated that the lack of support from advisors or mentors did not help the teachers carry out innovations (Pinzón Capador & Guerrero Nieto, 2018). In contrast, a different teacher said that she wanted to use technology in her classroom. Still, the school administrators did not allow them to use the government's ICTs like smart boards, tablets, and computers (Pinzón Capador & Guerrero Nieto, 2018). Furthermore, it must be noted that school leadership, the digital literacy of educators, and the local government play a role in the utilization of ICTs in the classroom. Support and adequate access to ICTs and internet connectivity seem to be a priority in Bogotá schools. The Ministry of Education has already been working on providing more internet connectivity in rural areas; however, there is still more research to be done regarding teachers' digital literacy in those areas and much more.

The Digital Divide in Rural Areas

In Colombia, there is a disadvantage for teachers and students in rural areas regarding access to ICTs, creating a digital divide (Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018). Colombia is not necessarily a developing country as a whole, but there are underdeveloped and disadvantaged areas, specifically areas encompassing the Bogotá area. Research has shown that disparities between rural and urban populations in developing countries explicitly concern technology access. To add, the access to digital technologies in schools and outside of schools varied as well due to socioeconomic status, gender, and ethnicity (Hardesty et al., 2014; Jacob et al., 2016; Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018). Factors determining the lack of access to technology, particularly ICTs, include disadvantaged minority communities, lower-income families, parents who lack awareness of resources, underresourced urban schools, and learning environment (Derbel, 2017; Hardesty et al., 2014; Jacob et al., 2016; Macharia & Pelser, 2014).

Moreover, research has shown that the lack of access to technology and achievement gaps have grown for elementary and high school students over the past decade (Hardesty et al., 2014). Nonetheless, further studies show that the inequalities continue into higher education, leading to even larger excellence gaps, which lead to "larger income disparity" (Hardesty et al., 2014, p. 75). Conversely, there is much dynamism that can work against a school's ability to close achievement gaps and include technological innovations (Jacob et al., 2016).

Transformational Leadership and Technology

Ng (2008) conducted a study where teachers were surveyed to examine teachers' perceptions of transformational leadership and whether or not they positively influenced integrating ICT into teaching practices. Ng (2008) incorporated the following dimensions of

transformational leadership style: collaborative structure, high-performance expectations, modeling behavior, individualized support, building consensus, strengthening school culture, intellectual stimulation, and developing a shared vision. The findings indicated "eight dimensions of transformational leadership could optimistically influence the integration of ICT into teaching" (Gencer & Samur, 2016, p. 228). Conversely, transformational leadership is one of the most important factors that influences and promotes educational technology integration in schools (Afshari et al., 2012; R. Lee, 2000).

According to Gencer and Samur (2016), developing technology aptitude standards for educational leaders are restricted in numbers at various institutions. The International Society for Technology and Education (ISTE) created a scale to measure technology leadership competency (Gencer & Samur, 2016). It evaluates school leaders' and administrators' expertise and skills across five dimensions (Gencer & Samur, 2016). Utilizing a mechanism such as measuring leadership's technology competency and surveying transformational leadership styles may show why teachers do not use ICTs in their classrooms.

According to Yamamoto and Yamaguchi (2019), the approach of key leadership styles transpired in the 1980s. Particularly in poor urban communities, the instructional leadership style was a successful type of leadership method (Yamamoto & Yamaguchi, 2019). Instructional leadership was categorized as commanding, strong, and dedicated to curriculum and instruction (Yamamoto & Yamaguchi, 2019). In the 1990s, the importance of leadership was altered from a top-down approach that was controlling and focused on organizational goals to a more bottom-up approach that was democratic and empowering like transformational leadership, which practices inspiring followers, collaboration, and organizational training (Hallinger, 2003; Yamamoto & Yamaguchi, 2019).

Transformational leaders focus on evolving the abilities of followers to foster improvements and change through a collective vision for school change. When it comes to technology, transformational leaders will encourage change and provide support to their teachers to achieve the vision for school change. Additionally, transformational leaders motivate followers to surpass their expectations (Eyal & Roth 2011; Yamamoto & Yamaguchi, 2019). By raising the followers' interests, a transformational leader fosters the needs of the followers, emboldens them, and gives a sense of purpose (Bass, 1990; Eyal & Roth, 2011; Yamamoto & Yamaguchi, 2019). Transformational leaders form the settings, which empower teachers to be dedicated and motivated to work toward change (Yamamoto & Yamaguchi, 2019). Transformational leaders inspire teachers to transform and reflect on previous and current practices, which is an essential factor for effective ICT implementation (W. Chen, 2013; Yamamoto & Yamaguchi, 2019).

According to Bass (1990), transformational leadership comprises four components: charisma or idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.

Charisma or Idealized Influence. Transformational leaders accomplish scholastic change by using all four components (Bass, 1990). First, transformational leaders who are charismatic generate mindfulness, are role models, and exhibit extraordinary ethical ideals (Bass & Avolio, 1994). A charismatic leader exhibits prominent influence and influence on followers due to followers having respect, confidence, and trust in the leaders (Yamamoto & Yamaguchi, 2019).

Inspirational Motivation. Subsequently, transformational leaders inspire and motivate followers by formulating goals. The followers feel the significance and purpose of tasks through

shared objectives due to the exceptional communication skills of transformational leaders. According to Hallinger (2003) and Yamamoto and Yamaguchi (2019), transformational leaders foster ICT implementation at schools and focus on individuals' best qualities and skills.

Intellectual Stimulation. According to Yamamoto and Yamaguchi (2019), "Transformational leaders stimulate followers intellectually" (p. 49). They do this by assisting followers with seeing through a new lens when faced with challenges—for example, by encouraging followers to inquire about expectations and to create additional innovative solutions to problems. Transformational leaders inspire improvement by intellectually stimulating followers to think outside of the box.

Individualized Consideration. Lastly, transformational leaders reflect on individuals. They serve as a mentor to guide followers in achieving goals and interests (Avolio & Bass, 1995). Transformational leaders also consider the differences between the interests and needs of the followers and how they can contribute to both.

Transformational leaders enable the link between personal needs and organizational goals (Hallinger, 2003). Linking personal needs and organizational goals, the motivation of followers shifts from short-term to long-term (Yamamoto & Yamaguchi, 2019). As explained, transformational leaders empower change and motivate and stimulate individuals to reach their full potential versus straightforwardly directing and domineering followers (Avolio & Bass, 1995; Bass, 1990; Eyal & Roth, 2011; Hallinger, 2003; Yamamoto & Yamaguchi, 2019). In a school setting, transformational leadership affects teachers' motivation and stimulates improvement using the aforementioned components (Hallinger, 2003; Yamamoto & Yamaguchi, 2019). It is comprehensible that transformational leadership can produce sustainable changes in

teaching practices and in the implementation of ICTs in daily instruction (Yamamoto & Yamaguchi, 2019).

About leadership factors concerning technology, Noland and Richards (2015) indicated that motivation has contingencies that vary upon topic, situations, leadership behaviors, inspiration, and activity levels. If a teacher is not motivated or interested in utilizing ICTs in their instruction, then they will not. What has been found in the research is the lack of digital literacy among teachers and support from their leadership, which contribute to the lack of ICTs being utilized in classrooms (Allen et al., 2015; Pinzón Capador & Guerrero Nieto, 2018; Zyad, 2016). Some have stated that the lack of support from advisors or mentors did not help the teachers carry out innovations (Allen et al., 2015). While other teachers have stated that they wanted to use technology in the classroom in Colombia, the school administrators did not allow them to use the government's ICTs like smart boards, tablets, or computers (Pinzón Capador & Guerrero Nieto, 2018).

Transformational leadership will help shift attitudes and transform teachers' and school leaders' activities and development. School leaders who foster a transformational leadership approach will exhibit certain characteristics like encouraging, supporting, and helping teachers be the best they can be while achieving the school's goals (Anderson et al., 2018; Cuadros et al., 2016; Ng, 2008; White, 2018). Transforming an adult's views or beliefs is built on anthropological communication. Knowledge is comprehended as using a prior interpretation to create a new or modified understanding of the significance of an individual's experience. Combining the two causes transformation. Merriam and Bierema (2014) affirmed that important occurrences or accrual of experiences in an individual's life that come together fosters a transformation.

Therefore, teachers' and school leaders' previous interpretation of new ICTs may affect their attitudes or willingness to learn and acquire skills to use the ICTs. However, transforming these views or attitudes will enable teachers and school leaders to develop the skills to change themselves and better their career and classroom aptitudes. Transformational leadership encourages new opportunities and ways of doing things while offering support, motivation, and fostering open communication with followers (Cherry, 2020). In closing, the process implicates transforming backgrounds through reflections of expectations or assumptions, authenticating opposed beliefs through discussion, being comprehensive, astute, open, psychologically capable of change, and reflecting on one's perception and assessing it critically (J. Chen, 2014; Merriam & Bierema, 2014).

Nevertheless, educators are pushed to utilize ICTs in the classroom. Mentors, leadership, local government, and teachers' digital literacy seem to play a role in using ICTs in the classroom. A priority in schools in Bogotá involves ensuring that there is support, adequate access to ICTs, and internet connectivity. Leadership style can affect school climate as research indicated that when a "teacher's perception of leadership improves, he or she becomes more effective in the classroom" (Allen et al., 2015, p. 4). Moreover, the research suggests that leaders must assess their collaborations with both students and teachers to uncover more opportunities to influence student achievement.

School Leadership in Colombia

There is a process for selecting teachers, and it is similar to that of selecting school leaders. Applicants must have obtained the same credentials as those mandatory to become permanent instructors (Radinger et al., 2018). Undoubtedly, school leaders have high levels of qualifications (Sánchez, 2018). But at minimum, school leaders need a university degree in

education (*licenciatura*). Indeed, it is required of school leaders to have relevant practice and knowledge in managerial and teaching roles to include "at least six years of experience for school principals, at least four years of experience for rural directors, and at least five years for coordinators" (Radinger et al., 2018, p. 157).

School leaders' career ladder is similar to that of teachers; however, salaries for school leaders are contingent on the level of education offered at the school where they work and depend on the leadership role (Radinger et al., 2018). For principals, pay increases are more significant than for rural directors and coordinators. If more than 1,000 students are enrolled or more school shifts are being offered, compensation will be raised, sometimes reaching 20% or 30% as an added monthly bonus (Radinger et al., 2018). Additionally, in remote areas, school leaders automatically receive a 15% monthly bonus on top of their salary (Radinger et al., 2018). Comparably, if the criteria of the ministry's learning management guide are accomplished, rural directors and principals can collect one extra monthly paycheck each year (Radinger et al., 2018).

According to Radinger et al. (2018), there were approximately 20,855 school leaders, including rural directors, coordinators, principals, and others in Colombia. The majority of school leaders (65%) worked in urban areas, and 5% were not assigned to any position (Radinger et al., 2018). About 39% of school leaders were between the ages of 55 and 64, with nearly 56% being men (Radinger et al., 2018). After classroom instruction, school leadership is considered the most crucial factor that influences student learning and school improvement (Bellei et al., 2016; Leithwood et al., 2004; Pont et al., 2008). According to Leithwood et al. (2008), leadership aids as a facilitator for the prospective aptitudes that previously existed inside schools, and leadership displays substantial outcomes on institute organization quality.

Fundamentally, schools in Colombia also afford chances for educator leadership and participation in making decisions (Radinger et al., 2018). However, school principals in Colombia face limits and constraints in being pedagogic leaders in practice, mostly because they dedicate most of their time to financial and administrative duties (Radinger et al., 2018). For example, during the 2018 OECD review visit, the crew observed that the coordinators devoted so much time to finding resolutions for conflicts and managerial tasks like organizing and coordinating meals at the school (Radinger et al., 2018). Principals have inadequate opportunities to offer their teachers formative and constructive feedback established on consistent evaluations and classroom annotations guided by the old statute (Radinger et al., 2018).

Moreover, another challenge that school leaders face is the mandatory annual teacher performance evaluations required by the new statute. Challenges have risen for school leaders. Time to prepare teachers for the assessments has been limited (Radinger et al., 2018). School leaders have little to no influence on recruiting or dismissing teachers and appointment of team leaders, which restricts the likelihood to form the pedagogical profile of schools (Radinger et al., 2018). Thus, Colombia faces an unfathomable state with sizeable sovereignty for schools to control and establish their curriculum and pedagogic methods but little devotion to emerging schools' leadership aptitude (Radinger et al., 2018). In Colombia, school capacity varies broadly but deviates toward the feeblest in disadvantaged regions where pupils are in specific need of resilient and heavy-duty pedagogic leadership and high-grade teaching (OECD, 2016). Accordingly, there are reduced chances for school leaders to mature and acquire pedagogic leadership dexterities. The national program called Let's All Learn (Programa Todos, a Aprender, PTA) has established a strategy to provide training for the school principals, especially those among the lowest performing in Colombia (Sánchez, 2018) based on preceding

developments with dissimilar organizations employing training programs for school leaders (OECD, 2016).

Socioeconomic Stratification in Bogotá

In the 1970s, Bogotá and many other cities in Colombia experienced uncontrolled urbanization (Función Pública, 2019; Marcos, 2018; Uribe-Mallarino, 2008). Individuals were displaced due to conflict, and people who sought better financial opportunities flooded the cities (Marcos, 2018; Uribe-Mallarino, 2008). Therefore, housing was conducted informally and resulted in poor conditions, no electricity or running water, unpaved roads, and an unproductive garbage system (Pålsson, 2020). Most of these structures encompassed a third of Bogotá. Yunda (2017) stated that policymakers recommended that individuals of high socioeconomic rank contribute to the needed improvements through utility bills. However, in the 1980s, policymakers had no reliable way of determining an individual's income; therefore, they relied on the standards of housing and used that to segregate socioeconomic classes (Pålsson, 2020; Yunda, 2017). Thus, the socioeconomic stratification (SES) system began, and major cities, including Bogotá, were divided into six SES levels, where levels 5 and 6 paid a portion of the subsidies for levels 1–3 (Función Pública, 2019).

In 1994, the SES system was officially introduced in Colombia (Función Pública, 2019; Pålsson, 2020; Uribe-Mallarino, 2008). It was an arrangement of subsidies generated to balance out income inequality and improve the Colombian population's livelihood by evolving the infrastructure (Función Pública, 2019; Pålsson, 2020; Uribe-Mallarino, 2008). According to Cortés (2018) and Pålsson (2020), for the expense of basic services like electricity, gas, water, access to the sewer system, and phone lines, the upper levels (5 and 6) pay more to cover the subsidies distributed to the lower levels (1, 2, and 3). Levels 1–3 receive subsidies, whereas level

4 does not receive or pay for subsidies (Cortés, 2018). To cover parts of the subsidies, levels 5 and 6 pay more for their utilities (Cortés, 2018).

Nonetheless, according to the Gini index, Colombia is considered number 16 in the world for unequal distribution of wealth, especially in Bogotá (Sánchez, 2018; World Bank, 2019). The Gini index measures the distribution of income and expenses (OECD, 2006). Statistics show a profound imbalance among Bogotá's population, where 9 out of 10 residents receive subsidies from the SES system (Pålsson, 2020). For example, SES level 1 is approximately 18% of the populace in Bogotá, about 40% for SES level 2, and around 31% for SES level 3 (Cortés, 2018). For SES level 4, it is roughly 6% of the population in Bogotá, 3% for SES level 5, and 2% for SES level 6 (Cortés, 2018).

According to Bogliacino et al. (2017), the SES system has had adverse effects socially, even though the intended goal of the SES system was to combat inequality. Conversely, studies have shown that residents of SES levels 1–3 continue to pay a greater percentage of their salary on utilities than SES levels 5 and 6 (Pålsson, 2020; Sepúlveda Rico et al., 2014; Uribe-Mallarino, 2008). This suggests that the SES system does not ensure equality as it intended. Additionally, a quantitative study demonstrated that the SES system failed to provide subsidies for the poor and take from the rich (Pålsson, 2020; Sepúlveda Rico et al., 2014). For instance, there are percentages from each SES level that live in poverty, except for levels 4 and 5. For example, SES level 1 has 51% that live in poverty, level 2 has 33%, level 3 has 16%, and level 6 has 6% (Sepúlveda Rico et al., 2014).

In closing, the SES levels are revised every 3 or 4 years in Bogotá; however, it is typically to adapt to new neighborhoods (Yunda, 2017). Unfortunately, there have not been many changes since 1996, when the first update occurred (Cortés, 2018; Sepúlveda Rico et al.,

2014; Yunda, 2017). This is due to the "high political cost to raise an SES level as inhabitants have to pay more for utilities" (Yunda, 2017, p. ix). Although the SES system has been around for several decades, inequality still exists, and it is possible that a review needs to take place to level out the disparities.

Colombian Strata

Historically, Colombia has had and still has six social classes. Jessel (2017) stated that the range of *estratos* (strata) goes from 1 being the poorest to 6 being the richest. People in the higher strata pay more, can afford to live in better areas, and are afforded better opportunities. The socioeconomic stratification shows prejudice and fuels social segregation (Jessel, 2017). This type of stratification system is unique to Colombia and was first implemented in the 1980s but now applies to university fees and specific social programs (Jessel, 2017). Unfortunately, more than half of the populace resides in strata 1 and 2 and lives in zones that are dense shantytowns that cover hillsides (Jessel, 2017). The scheme of stratification was to allow the poor to pay less and help improve urban inequity (Jessel, 2017). However, according to the World Bank, Colombia is the second most unequal country in Latin America, even after introducing the stratification system several decades ago (Jessel, 2017). This system was also built to classify buildings and districts, but it is now just classifying people, affecting jobs, living conditions, and, most notably, education.

According to Villegas et al. (2013), the education system in Colombia has schools that favor the rich kids and punish, in a sense, the kids who come from the lower strata. Forcibly, this serves to reinforce and reproduce symbolic diplomas and social hierarchies (Villegas et al., 2013). Additionally, students from wealthy families consistently do better than students from low-income families (Villegas et al., 2013). Often, this is due to the limited resources that low-

income families have access to. Thus, kids from upper-class families are better prepared to get ahead and belong to an inheritance that favors them to obtain the best results and academic success (Villegas et al., 2013). However, the government has implemented a benefit where if students get excellent grades but do not have the money to go to a university, the government will pay for them to go (Villegas et al., 2013). Consequently, as this is an excellent benefit for the student and family, due to the different classification of people, students who come from strata 1–3 often get severely bullied (Villegas et al., 2013). Nonetheless, there is such a radical separation of social classes in Colombia, and unfortunately, the poor receive a lower-quality education (Villegas et al., 2013).

Who Governs Education in Colombia?

Education in Colombia is primarily controlled and regulated by the Single Regulatory Decree of Education (Decree 1075) of 2015 and Law 715 of 2001, the Constitution of 1991, and the General Education Law of 1994 (Radinger et al., 2018). The Decree 1075 syndicates all education declarations legislated before and after 2015 (Radinger et al., 2018). Equally, Law 715 controls Colombia's fiscal allocations throughout levels of authority with the Sistema General de Participaciones (SGP), better known as the General System of Transfers (Radinger et al., 2018). This type of income distribution apparatus also dispenses funding for institute education (Radinger et al., 2018).

As one of the first nations in Latin America to initiate decentralizing its institute systems, "Colombia has become one of the more decentralized countries in the region" (Radinger et al., 2018, p. 49). Before and after adopting the new constitution, in the 1980s and 1990s, Colombia began the first steps to reorganize education to municipalities, divisions, and districts (Radinger et al., 2018). There are three levels of management for school education: school, territorial (local

or regional), and central (Radinger et al., 2018). The authority framework is equivalent to all corresponding education levels, ranging from preprimary to upper secondary (Radinger et al., 2018). Also, the unchanged authorities are accountable for governing, finance, and stimulating education for all levels (Radinger et al., 2018). The central region's head sector is the Ministry of Education (Ministerio de Educación Nacional; Radinger et al., 2018).

The Ministry of Education has four responsibilities: regulation, administration, planning and policies, and monitoring. Moreover, the ministry prepares objectives and policies, controls delivery, determines standards and procedures, monitors the structures, and offers practical assistance and support, but it does not straightforwardly provide instruction (Radinger et al., 2018). The ministry has recently acquired a progressively vital role in designing and implementing programs that aim at distinctive schools (Radinger et al., 2018). In addition, the ministry works with different entities like the Colombian Institute for Educational Evaluation (Instituto Colombiano para la Evaluación Educative, ICFES), National Institute for the Deaf (Institutional Nacional para Sordos, INSOR), and the National Institute for the Blind (Instituto Nacional para Ciegos, INCI; Radinger et al., 2018). While INSOR and INCI disseminate public policies for individuals with disabilities, ICFES is responsible for assessments and evaluations for education and researching the instruction's quality (Radinger et al., 2018). Furthermore, the three organizations have managerial autonomy and a self-governing budget plan.

Autonomy in schools has been in effect since the early 1990s. This autonomy not only includes the budget from the school's education service fund (Fondos de Servicios Educativos, FSE) and the curriculum founded by the General Education Law, but it also includes developing and implementing an educational project (Proyecto Educative Institucional, PEI) with the school community (Radinger et al., 2018). However, there is the minute authority on the choice or

discharge of teachers commissioned by the Secretary of Education (Radinger et al., 2018). Each

school's administration and management correspond ordinarily with the institute's directive

council (*consejo directive*) and principal (Radinger et al., 2018). Generally, schools will also

seek participation or contribution from the school community to include a parental committee, a

student council, a coexistence committee, and an academic counsel (Radinger et al., 2018).

Education Resources in Colombia

Methodologically, dispensing resources to the corresponding secretaries of education of

the licensed provincial territories has been progressively reformed (Contraloría General de la

República, 2017). In 2016, an incentive for superiority and competence in managing spending

was added (Radinger et al., 2018). For each certified provincial entity, the following applied:

> The average per capita cost, based on the cost of maintaining the current payroll of
>
> teachers and school leaders, is added to the maximum approved administrative
>
> expenditure. Based on the previous year's enrollment, this expense represents the largest
>
> proportion of the total cost of education and is relatively stable over time. (Radinger et
>
> al., 2018, p. 91)

Per the average capita cost, cost ratios are projected for every education level (transition,

primary, lower secondary, upper secondary). These percentages are appraised based on the

practical relation developed by the Ministry of Education for students' ratio per classroom and

teachers at the school and national level (Radinger et al., 2018). Operating costs vary in each

territory, especially in rural areas. If a student attends a school in a rural area, an additional 30%

is given (Radinger et al., 2018). Additionally, supplementary offerings are provided for each

level depending on student characteristics, with the purpose to cofinance the premium cost to

guarantee educational supplies for these students (Departamento Nacional de Planeación, 2015a).

The Ministry of Education permits a precise percentage of the projected resources to annually finance administrative expenditures (Radinger et al., 2018).

Colombia's capital disbursement in school education has 7% of the total being spent on primary and secondary education (Radinger et al., 2018). Expenditure on teachers is a high percentage of overall spending on education. It is more noticeable in public instruction and shows that 84% of current expenditure is for teachers (OECD, 2017). It can be expected that teachers' salaries would make up a significant portion of the costs where there are a large number of education professionals. In Colombia, institutions pay for health insurance and social security, retirement, interest, and a twice-a-year-bonus. Equally, there are 28 countries with comparable data from OECD Education at a Glance, exhibiting that expenditure for teachers is higher in Colombia and substantially surpasses the average 62% for OECD countries (Radinger et al., 2018).

Educational Structures in Colombia

Under the General Education Law, official or formal education can be defined as instruction that is accessible by permitted establishments, prearranged in a series of cycles and advanced curricular benchmarks, and leads to academic entitlements and degrees (Radinger et al., 2018). Formal education is divvied up into three concentrations directed from the educational decree. The first includes preschool (*educación preescolar*), which comprises prekindergarten (*prejardín*), kindergarten (*jardín*), and a transition year or Year 0 (*año de transición*; Radinger et al., 2018). The second concentration is basic (*educación básica*), which encompasses the first cycle of primary education (*educación básica primaria*) and the second set of lower secondary education (*educación básica secundaria*; Radinger et al., 2018). Lastly, the third concentration involves upper secondary education (*educación media*; Radinger et al., 2018). The OECD

Reviews of National Policies of Education of Colombia show that the school resource review primarily focuses on the education and transitions between the different concentrations (Radinger et al., 2018).

Enrollment in Rural and Urban Areas in Colombia

According to Sánchez (2018), 960 children enrolled in preschool education back in 2017. There were 746 children in urban areas, and 214 were in rural areas. Grounded by the data from the Instituto Colombiano para la Evaluación Educative (ICFES), roughly 1 million children attended early childhood education and care (Ministerio de Educación, 2018). Children aged 6 to 10 learn 5 years of primary education (Years 1 to 5), and adolescents aged 11 to 14 acquire 4 years of lower secondary education (Years 6 to 9). After completing lower secondary education, students obtain a fundamental education certificate (Certificado de Estudios de Bachillerato Básico) enabling them to register in upper secondary education (Radinger et al., 2018). Upper secondary education continues for 2 years for adolescents between the ages of 15 and 16 (Years 10 and 11). Sánchez (2018) stated that approximately 1 million students were enrolled in upper secondary education back in 2017. Urban areas had 814,000 students, and in rural areas, there were 300,000. Apart from this, nearly 7.3 million schoolchildren were registered in primary education in 2017 (Sánchez, 2018). Moreover, almost 1.9 million kids attended basic level education in rural areas, and 5.4 million kids attended in urban areas (Sánchez, 2018).

Notably, upper secondary education students can elect between a general or vocational program (Radinger et al., 2018). Wide-ranging programs (*bachillerato académico*) concentrate on arts, humanities, and science. Vocational programs (*bachillerato técnico*) offer a concentration in whichever of the dynamic or facility sectors one chooses, such as trade, economics, management, communication technology, farming, harpooning, or tourism (Sánchez,

2018). According to the Ministerio de Educación (2018), the enrollment of adolescents in upper secondary education was 61.6% for the general program and 38.4% for the vocational program. Despite a large number of registrations over the past several years, the total number of student matriculations at all school education levels has been declining in connection with demographic trends (Sánchez, 2018). Between both public and private governments, the matriculation diminished by 10.9% between 2010 and 2017 (Sánchez, 2018). The largest drop of the three levels was in primary education, with a 14.9% decrease (Sánchez, 2018). Most importantly, there is a contrast between enrollment trends in urban and rural areas. Specifically, there was a 10.28% decrease in lower education in urban areas and a 13.09% decrease in upper education (Sánchez, 2018). However, in rural areas, there was an increase in enrollment in those two levels of 7.59% for lower education and 21.98% for upper education (Sánchez, 2018).

Sánchez (2018) stated that in 2017 there were 881 school sites in Colombia, including public and private. Similarly, 80.2% of the schools were classified as rural, while 19.8% were categorized as urban (Sánchez, 2018). Noticeably, across the country, the number of school sites within a school cluster varies. Traditionally, school locations and schools in Colombia function in dual periods, one in the morning and one in the afternoon of a projected 5–6 hours a day (*doble jornada*; Radinger et al., 2018). Radinger et al. (2018) noted, "Urban school clusters are more likely than rural ones to offer multiple shifts of school education" (p. 57).

Teachers' ICT Usage in Colombia

While there is some research on the use of technology, specifically ICTs in Colombian schools, the focus was on pedagogical practices and teachers' emotions. There is not much research on access and utilization in rural and urban schools in Bogotá. Also, there is not much research on determining if there is an impact on student achievement for students with or without

access. According to Pinzón Capador and Guerrero Nieto (2018), teachers in Colombia state that there have been significant constraints contributing to the lack of technology integration in classrooms. The constrictions include connectivity, technological skills, infrastructure, institutional support and feasibility, user-friendly interface, time, and students' likes and dislikes (Pinzón Capador & Guerrero Nieto, 2018). Also, teachers need institutional support, and students need connectivity to the internet and good infrastructure. Cuban and Jandrić (2015) believed that historically policy makers have overlooked and ignored the role of teachers' experiences with devices or social media, affecting how they view new technology and use it in the classroom.

Conversely, teachers' attitudes toward ICT implementation and professional development are factors to consider. Research shows several divergences between teachers' behavioral readiness to use ICT in the classroom and various obstacles that slow down the practice of ICT integration (Zyad, 2016). Overall, the lack of ICT equipment affects teachers' encouragement to develop lesson plans based on ICT implementation (Zyad, 2016). In short, attitudes between male and female teachers seem to differ based on age and contribute to the usage of ICTs (Zyad, 2016).

In Colombia, the Ministry of Information Technologies and Communication typically affords ICT resources to schools and the Ministry of Education (Radinger et al., 2018; Rojas-Rojas, 2018). Three phases include schools receiving a computer for every 20 students, teacher education on ICT implementation, and reorganizing maintenance and computers (Barrera-Osorio et al., 2012). Also, the Ministry of Information and Communication Technologies implemented the Live Digitally (Vive Digital) strategy, which afforded ICT resources (Kioskos Vive Digital) in rural areas and several other communities in Colombia (Radinger et al., 2018; Rojas-Rojas,

2018). In response, more than 7,000 kiosks had been mounted in institutes with restricted use for

academic reasons only during school times (Sánchez, 2018).

Studies have shown that teachers need official support to develop the required skills to

transform their classrooms utilizing ICTs (Pinzón Capador & Guerrero Nieto, 2018). Cifuentes

and Vanderlinde (2015) conducted a study and found that teachers who engaged in using ICTs

were also reluctant to utilize ICTs. Additionally, ICTs are key intermediaries for educational

change and staff development (Albugami & Ahmed, 2015; OECD, 2019). Still, it required

leadership to be active and involve a shift in policy, funding, pedagogical and legislative

frameworks, and much more (Cifuentes & Vanderlinde, 2015). Thus far, studies lack the analysis

of ICT leadership dynamics in Colombia and the investigation of if transformative leadership

affects Colombian teachers' usage and integration of ICTs in their instruction. Finally, with the

current pandemic and Colombian teachers being forced into the realm of ICTs, how have their

attitudes toward ICTs changed, and what challenges have they faced?

Rural Education in Colombia

In 2016 in rural areas, education was given different incentives with the armistice

agreement between the government and the Fuerzas Armadas Revolucionarias de Colombia

(FARC; Radinger et al., 2018). It was agreed to acquire and apply a Special Rural Education

Plan (Plan Especial de Educación Rural, PEER; Radinger et al., 2018). Exercising the

categorization of "rurality" established by the Rural Mission, 2 million students were registered

in a rural school (Ministerio de Educación, 2018). A previous initiative to improve rural areas'

education was the Rural Education Program (Programa de Educación Rural, PER; Radinger et

al., 2018). The intended purpose of this program was to improve the quality of life for the rural

population. There were two phases, the first from 2001 to 2006 and the second phase from 2008

to 2015 (Radinger et al., 2018). In its early period, the program operated with 120 nonspecialized municipalities in 30 districts (Radinger et al., 2018). During the second period, the plan worked with 36 licensed territorial beings. Conversely, the program intended to increase access to quality instruction and avert dropouts in rural areas (Radinger et al., 2018). Additional strategies focused on improving essential competencies in language and mathematics in basic primary education and the teaching of English.

Students' socioeconomic background in Colombia impacts accessibility to education and academic outcomes (Radinger et al., 2018). According to Centro de Estudios Distributivos, Laborales y Sociales and the World Bank (2017), it is less likely that pupils from the two lowest salary quintiles will attend a private school. There is a high level of socioeconomic segregation between the private and public sectors, even though there is no significant degree of social segregation between all schools in Colombia (Radinger et al., 2018). Thus, this has led to substantial performance apertures between the two. Colombia bestows an intermediary depiction concerning socioeconomic background and its influence on educational opportunities compared to that of other countries (Radinger et al., 2018). Irrespective of where individuals live, there is still a long way to ensure equal opportunities, even though Colombia has made progress in creating better educational opportunities for rural students (Radinger et al., 2018).

Academic Scores for Rural Students in Colombia

On average, academic scores were 38 points lower for rural students than for urban students in Colombia across more than one academic year (Radinger et al., 2018). Consequently, this high gap is more significant than in other countries affiliated with OECD (Radinger et al., 2018). There is less of a performance difference in other Latin American countries with available data; for example, 15-year-old rural students in Costa Rica performed equally with urban

students (Radinger et al., 2018). In contrast, Portugal has the sixth greatest rural-urban gap among all participating countries in PISA 2015 and had a performance difference double that of Colombia (OECD, 2016; Radinger et al., 2018). However, when socioeconomic context is considered and examined, the rural–urban gap dissolves. Colombia is one of the six analyzed countries where this gap disappears (Echazarra & Radinger, 2019). In short, a vast amount of poverty in rural areas creates challenges for students and schools to succeed (Radinger et al., 2018).

Barriers for Rural Students in Colombia

Additional barriers are still present for rural students. The transition to higher education and ambitions are among some of the examples. According to Echazarra and Radinger (2019), rural students have higher academic achievement levels compared to those of urban students. In Colombia, expectations of completing a university degree are lower for rural students than for urban youths. This gap continues to stay when taking a look at students' socioeconomic backgrounds.

Nonetheless, there are benefits to rural education, such as cohesive communities and small class sizes (Radinger et al., 2018). But challenges continue for rural students, providing a higher-quality educational environment beyond social shortcomings (Radinger et al., 2018). Essentially, low population density and topographical distance make it pricier to deliver education, entice and preserve high-quality teachers, provide an extensive curriculum, and offer substantial resources (Echazarra & Radinger, 2019).

COVID-19 and Technology

When the coronavirus (COVID-19) pandemic devastated the world, people were affected physically, emotionally, mentally, and educationally. This forced schools to switch to e-learning

and forced teachers to use ICTs. According to the United Nations (2020a) and Bushweller (2020), the communities most affected were those with low levels of digital literacy (students, teachers, and parents), areas with poor infrastructure, and individuals who fall into the low socioeconomic category. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020a) found that Latin American countries' online platform usage went up by 84% and paper usage by 67%. Some schools reduced subjects by 33% and content by 18% in Latin America (UNESCO, 2020a). During the school closings in Latin America, the online platforms were used by 29% of teachers and paper-based assignments, by 21% (UNESCO, 2020a). Additionally, the teachers who were trained in utilizing online platforms varied among the various school structures. For instance, only 68% of teachers had been trained for primary education and 58% for preprimary (UNESCO, 2020b). For both lower secondary and upper secondary education, about 75% of teachers had been trained (UNESCO, 2020b).

Teacher ICT Usage and Preparedness in Colombia Before the COVID-19 Crisis

The OECD (2020a) disseminated school surveys before the COVID-19 crisis to examine how prepared schools, students, and teachers were in Colombia to use ICT for learning and teaching. The ability to use ICT makes it achievable to resume teaching and learning when somatic communications are no longer feasible (OECD, 2020a). The Teaching and Learning International Survey (TALIS) conducted in 2018 exhibits results showing that, on average, 53% of teachers conveyed that students were permitted to use ICTs for classwork or projects (OECD, 2020b). According to OECD (2020b), 75% of teachers in Colombia reported that they receive ICT in training and education; however, from the 2018 TALIS, 34% of teachers stated there is a significant need for ICT professional development for teaching. It was also mentioned that to implement ICT in schools, the availability of sufficient resources is required. Unfortunately,

"principals' views on which school resources are issued are hindering the capacity to deliver quality instruction" (OECD, 2020b, p. 3).

Furthermore, when confronted with an abrupt change, the level of adaptation relies on empowering and supporting teachers as a trained collective to adapt to the different realism of remote teaching. When challenged with sudden transformation, leadership needs to provide teachers with the tools to reach and teach every student in all territories. To conclude, this predicament in education has been unparalleled. Global education goals have been set back and have inexplicably affected the most vulnerable and impoverished populations. Sweeping changes need to be made in education delivery, professional development for teachers and leaders, and funding and resources for all communities.

Chapter Summary

More needs to be done to provide official academic support to institutes, especially those school sites in urban and remote areas (Radinger et al., 2018; Rojas-Rojas, 2018). The data compiled over the last three epochs have revealed that not all objectives of the secretaries of education have the capability and reserves to effectually support "schools and school leaders in the provision of education within their territory" (Radinger et al., 2018, p. 185). Some cities such as Bogotá, Manizales, and Medellín have advanced from increased independence to inflated access and improved eminence. But armed conflict, rural population, and scarcity of resources have affected schools and leaders in other areas. This has affected the ability to administer resources to schools efficiently (OECD, 2016).

Classrooms are diverse spaces, and each classroom gives its promises, resources, and trials. There is no single approach that can influence all learners. Consequently, there must be opportunities where teachers can acquire the skills to use numerous methods to accomplish

learning and development objectives demonstrated to be successful. Individuals or specific organizations are in charge of making sure teachers and school leaders are supported and prepared to work, teach, and obtain the knowledge needed for diverse students (Radinger et al., 2018). These resources include secretaries of education, the Ministry of Education, higher teaching schools, faculties of education, territorial teacher education committees, and schools that offer professional development (Radinger et al., 2018).

While schools in Colombia contain grade levels from preschool to upper secondary, this study focused on primary teachers' and school leaders' usage and support of ICTs. However, it was important to include information about each grade level to understand the school dynamics since all grade levels are combined. Rojas-Rojas (2018) stated, "The scope of the ICT tools in the rural setting is vast and has a great impact on students" (p. 91). There is a digital divide in Colombia. Research has shown that expenditures vary for different territories in rural and urban areas, and the use of ICTs is limited. But with the help of these technological tools, students improve (Rojas-Rojas, 2018). The Ministry of Information and Communication Technologies in Colombia worked on many policies to promote ICTs. Still, the focus needs to be on the leadership and teachers to implement these tools successfully (Rojas-Rojas, 2018).

Chapter 3: Research Methods

In Colombia, citizens experience extreme economic disparity levels and little social progress throughout generations (Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018; Villegas et al., 2013). This is due to inequities and lack of opportunities among the lower strata. It is challenging for these individuals to move past their social upbringing and background and improve or surpass outcomes in socioeconomic environments (Radinger et al., 2018). The purpose of this study was to explore how transformational leadership influences teachers' attitudes and usage of ICTs in an urban school in Colombia. Similarly, according to Pinzón Capador and Guerrero Nieto (2018), significant constraints contributed to the lack of technology in classrooms. Teachers need leadership support to utilize ICTs in the classroom successfully. Thus, transformational leadership is a key component to strengthen teacher training and overall organizational improvement (Cuadros et al., 2016). This chapter will discuss the population, methodology, setting, data collection process, trustworthiness, data analysis methods, researcher's role, ethical considerations, assumptions, limitations, delimitations, and summary of Chapter 3.

Methodological Approach

For this qualitative case study, semistructured interviews, document analysis, analytic memos, and a focus group discussion were used to gather data on the scope of teachers' use of and attitudes toward ICTs and leadership support. According to Patton (1990), case studies can assist the researcher in understanding certain types of individuals, a specific problem, or a distinctive situation in depth. Additionally, Özen (2018) found that a case study was effective in examining if school leaders had an impact on teachers' perceptions. It was essential to know teachers' general attitudes toward ICTs, as it affected their willingness to incorporate ICTs into

daily instruction. Discovering if transformational leadership affected teachers' usage and attitudes toward ICTs was useful. The data collected from this qualitative case study provided valuable details. The data determined if school leaders fostered a transformational leadership approach by encouraging and supporting teachers to achieve the school's goals of incorporating ICT in daily instruction.

Ejimabo (2015) stated that researchers use the qualitative method to submerge themselves methodically in the informants' lives through interviews. Ejimabo (2015) also affirmed that qualitative research emphasizes understanding through observation and careful documentation. A case study method helped find themes that arose from teachers' attitudes and how transformational leadership affected some of the feelings. Also, the case study approach assisted with identifying transformational leadership traits in school leaders at this urban public school. Therefore, in light of the literature, this study answered the following questions:

RQ1: What challenges do primary school teachers encounter when they attempt to assimilate ICT into their lessons?

RQ2: How do primary teachers perceive their experiences regarding ICT integration?

RQ3: What role does transformational leadership play in the availability of resources and support of classroom technology implementation?

RQ4: How have teachers' attitudes changed regarding technology use with a required practice of ICTs during the COVID-19 pandemic?

Population, Setting, and Sample

A convenience sampling method was used. Convenience sampling "involves selecting participants with whom researchers have easy access" (Saldaña & Omasta, 2018, p. 96). Participants included male and female directors, primary team leads, the technology instructor,

and teachers in a primary school in an urban district. At this public school located south of

Bogotá, there are approximately 1,600 students. There are 38 teachers in the primary school and

around 37 in the bachillerato school. There are eight teachers for preschool. Additionally, at this

public school, only one instructor specializes in ICTs and one in special education for the entire

school among all grade levels. The community that encompasses this school and the students

who attend this school come from social strata 1 through 2, though the teachers come from strata

3 and 4. Moreover, there are 19 individuals in leadership positions.

Urban and Rural Population

Although Colombia is considered a unitary state, its government agencies and offices are

located in Bogotá, the capital (Radinger et al., 2018). Doctrinally and managerially, the country

is systematized into provincial states (Radinger et al., 2018). Territorially, Colombia has 32

divisions, 7 districts, and 122 municipalities and indigenous zones. While the divisions

communicate to the provincial level, cities and districts correspond to the local level (Radinger et

al., 2018). Their own councils, the Cabildos Indígenas, and their own laws govern indigenous

territories (Radinger et al., 2018).

According to the OECD review of resources, Colombia has 122 formally acknowledged

indigenous minorities. Concurring with the Afro-Colombian Census of 2005, 10.6% were

classified as Afro-Colombian. Moreover, 3.4% of the populace consisted of indigenous

individuals, and 0.01% the Rrom. Conversely, in the Amazonas, Pacific regions, and the La

Guajira district, the indigenous communities are steady (Radinger et al., 2018). Notably, the

Afro-Colombia populations also have a massive concentration in the Caribbean and Pacific

regions (Radinger et al., 2018). Approximately 65 indigenous languages, including the Romani

of the Rrom and two Afro-Colombian, are acknowledged and recognized as official languages

within these communities (Sánchez, 2018).

Like various Latin American countries, Colombia has become mainly urbanized

(Radinger et al., 2018). Out of 37.8 million people, more than 77% of Colombians lived in urban

areas in 2017 (Radinger et al., 2018). The remaining 23% of the populace lived in rural parts

(World Bank, 2018). However, new statistics show that the urban population rose, and now

80.4% of the population is considered urban (Worldometer, 2020). Additionally, the expansion

of urbanization has occurred due to relocation from rural to urban areas due to the failure of

municipal policy (Radinger et al., 2018).

Rural life plays a significant role in Colombia, though over the past 50 years, the country

has become urbanized (Departamento Nacional de Planeación, 2015b). According to the

Programa de las Naciones unidas para el Desarrollo (PNUD, 2011), more than 30% of

Colombians resided in rural areas. Comparably, more than 60% and close to 80% of the

municipalities were reflected as rural in 2011. The PNUD (2011) defined rural as the distance

and density of the area. Looking at the disparities in the different regions, Colombia's

topography limits networks between regions due to the absence of effectual infrastructure

(Radinger et al., 2018). This is important to know as while Colombia has become more

urbanized, social strata in the lowest levels are not supported well and divide the country, having

access to public schools only (Guevara & Shields, 2019; Guillermopreito, 2020; Jessel, 2017).

Compared to in other countries with a flatter topography, constructing new roads and

preserving Colombia's existing paths are extremely expensive due to the high mountain ranges

(OECD, 2017). Moreover, additional deeds contribute to regional inequalities in agriculture,

limited connections between urban and rural areas, and weak institutions (OECD, 2014). For this

case study, the public school resides in a region that belongs to strata 1–3, located in the

mountains, and the living conditions are relatively poor. Inequalities in economic and social

improvement predominantly affect Colombia's ethnic factions, which are exceedingly condensed

in territories with higher poverty levels and in rural areas (Radinger et al., 2018). Furthermore,

people from indigenous and Afro-Colombian communities have low concentrations of welfare

throughout the course of life in a figure of magnitudes to include education, nutrition, and health

(Radinger et al., 2018). Disproportionally, ethnic minority individuals have experienced violence

and involuntary dislodgment (Cárdenas et al., 2012).

In short, it is important to recognize Colombia's topography because it affects students

and the teachers who reside in those areas and who transport them back and forth for school or

work. Colombia's government is making efforts to close "the rural–urban gaps" and provide

quality education and allocation of teachers to both areas (Radinger et al., 2018, p. 4). However,

the recruitment of teachers does not focus on student or school needs but rather teachers' rights,

which, in turn, leads to "inefficiencies and inequities in the allocation of teachers" (Radinger et

al., 2018, p. 5). Conversely, teachers do not always receive the necessary training "to familiarize

themselves with new materials" nor the support from "school leadership and Secretaries of

Education" (Radinger et al., 2018, pp. 13–14). Therefore, it was important to understand not only

Colombia's topography but also the challenges that teachers face as the social strata and dwelling

locations affect teachers' ability to use ICTs outside of the classroom. Without proper training,

teachers' attitudes or perceptions regarding ICTs are affected because they do not have the tools

or support needed to include ICTs into their daily instruction as they need.

Setting and Population of the Study Site

According to the National Census of Population and Housing (Censo Nacional de Población y Vivienda, CNPV), there are approximately 48,258,495 people in Colombia (Departamento Administrativo Nacional Estadistica [DANE], 2020). Women make up 51.2%, and men form up to 48.8% of the population (DANE, 2020). Children 14 and under make up 22.6% of the population, dropping 8.1% since 2005 (DANE, 2020). Those individuals 15 to 65 make up 68.2% of the populace, increasing 5.2% since 2005 (DANE, 2020). Moreover, individuals aged over 65 make up 9.1% of the population, increasing 2.8% since 2005 (DANE, 2020). The population is dispersed in various areas. In 2005, 76% lived in cities, while 24% lived in rural areas or towns (DANE, 2020). In 2018, 77.1% lived in cities, 7.1% resided in central towns, and 15.8% inhabited rural areas (DANE, 2020).

According to the statistics from CNPV and DANE (2020), access to public services across the country includes electricity, water, and sewer, with a significant increase in gas access. There were no statistics for trash collection or the internet back in 2005; however, the data showed that 81.6% had access to trash collection services, and 43.4% of the population had access to the internet in 2018. This is important to consider as 43% of the population has access to the internet, a low percentage that does not reflect the statistics for those who reside in the study site. See Figure 1 for data collected on access to public services.

Figure 1

Access to Public Services Across the Country
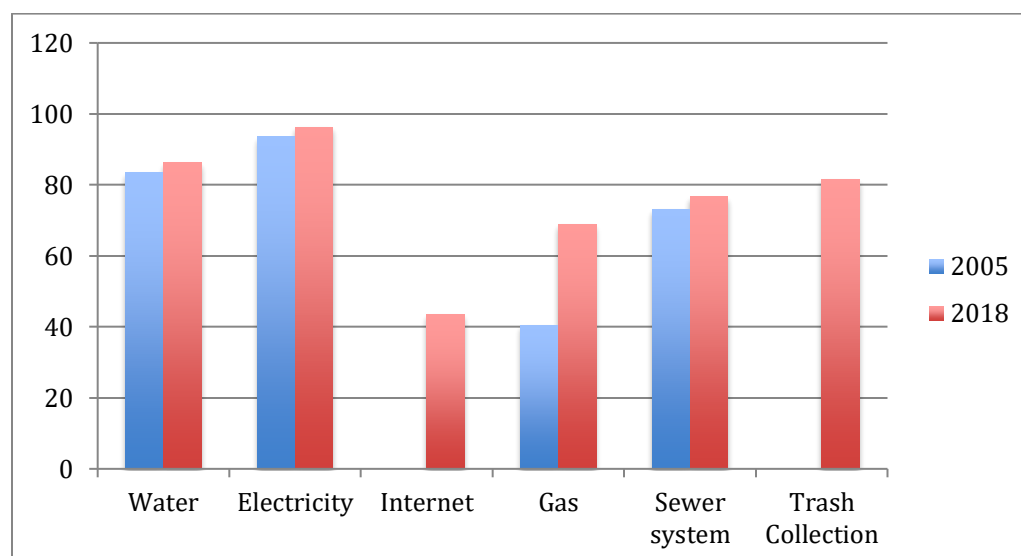
Note. Adapted from Censo Nacional De Población y Vivienda, by Departamento Administrativo Nacional Estadistica. (2018). (https://www.dane.gov.co/files/censo2018/infografias/info-CNPC-2018total-nal-colombia.pdf). In the public domain.

This study site is the eighth locality and the 18th district of Bogotá. According to the Alcaldía Mayor de Bogotá (2020a), there were approximately 377,615 people, with 52% being women and 48% being men. Regarding age, 60% of the population ranged from 15 to 55 years of age (Alcaldía Mayor de Bogotá, 2020a). The populations of the study site district are part of strata 1–3 (Alcaldía Mayor de Bogotá, 2020a). About 5% resided in stratum 1, 42% in stratum 2, and 53% in stratum 3 (Alcaldía Mayor de Bogotá, 2020a).

There were about 97 schools in the locality, with 63 being private and 27 being public (Alcaldía Mayor de Bogotá, 2020b). Out of all of the schools, only 29 had the ability to work with students with disabilities (Alcaldía Mayor de Bogotá, 2020b). Nearly 27.5% of the study's site populace was school age, between the ages of 5 and 17, totaling 95,000 people (Alcaldía Mayor de Bogotá, 2020b). The percentage of illiteracy was 2.4%, 0.2% higher than in Bogotá,

though 93% of the population could read and write (Alcaldía Mayor de Bogotá, 2020b). There was an average of 7.5 years of education, with a high number of individuals (5.6%) with no level of education (Alcaldía Mayor de Bogotá, 2020b). About 2,657 people had a higher education degree out of the 377,615 (Alcaldía Mayor de Bogotá, 2020b). Individuals, specifically young people, not finishing or attending school has caused conflicts between job opportunities and training (Alcaldía Mayor de Bogotá, 2020b). The Office of the Alcaldía Mayor de Bogotá (2020b) plans to implement projects that aid in training and education in the study's site district.

The public school located in the study's site district does not have statistics of the teachers or staff listed online. The demographics were obtained from the school. As mentioned previously, the school had approximately 1,600 students, 38 primary teachers, 37 bachillerato teachers, eight preschool teachers, one technology specialist, one special education teacher, and 19 individuals in leadership positions. There was also one secretary for primary and bachillerato, three administrators, one director for primary and bachillerato, and two additional section heads for primary. Moreover, each of the following subjects had one individual in charge of the entire specialty: natural science and environmental education, social studies, religious education, teacher coordinator, humanities in the Castilian language, humanities in English as a foreign language, mathematics, art education, physical education, information technology, preschool, school orientation, and professional inclusion.

The school staff resided in strata 3 and 4. The ages of all staff ranged from 30 to 69 years old. Most of the staff had been with the school for more than 14 years, with a large group teaching at the school for approximately 11 years. There was also a small group of teachers who had been with the school for roughly 3 months as of April 2021. This small group had recently joined the school as the new calendar school year began in February 2021. At this current

moment, there were neither teachers nor school leaders who came from an indigenous background nor were any Afro-Colombian. For primary teachers who taught Grades 1 and 2, the head teacher instructed the four basic areas: Spanish, science, math, and social studies. For Grades 3–5, the teachers taught on a rotation, and the specialized instructors taught English, visual arts, dance, technology, music, and physical education. For the bachillerato part of the school (Grades 6 and up), the teachers chose their materials and curriculum for each educational domain (Spanish, math, social studies, science, and specialist courses in music, art, technology, and more).

Data Collection

The research questions for this case study focused on the experiences, feelings, and challenges of utilizing ICTs in the classrooms and leadership support. Mashinini (2008) stated that the data from the participants set up a scaffold on warranting efficient data collection and analysis. Thus, conducting semistructured interviews would be appropriate since "interviews are inductive," responses are not predetermined, and they allow participants to use "their language and provide long and detailed responses" (Leavy, 2017, p. 138). The director of the public school sent out an email requesting participants for this case study. The email contained information about the case study, expectations, and a consent form. The goal was to conduct interviews over the span of 1 month. However, due to the nature of the riots and protests during the start of data collection, the interviews were sent out via Google Forms. Teachers and school leadership sent responses back within 5 days. Follow-up questions were sent via email to interviewees who gave a one-word answer to some questions or stated that they did not understand the question. An interview protocol (see Appendix A) was used to guide the interviews.

A translator was used to translate the interviews from Spanish to English. The translator has a background in translating educational decrees from the Ministry of Education, guidance and documents from the Ministry of Health, and for the U.S. Embassy in Colombia. All personally identifiable information remained confidential, as participants' names were blacked out using Adobe Acrobat Pro DC software. This ensured that personal names were kept private. To ensure that the transcripts were accurate, another translator from a different department in the U.S. Embassy in Colombia reviewed the interviews for the purpose of member checking.

Another data collection method included document analysis. Bowen (2009) stated that document analysis is frequently used with other qualitative research methods. Additionally, all types of documents supported me in uncovering significance, increased understanding, and insights important to the research problem (Bowen, 2009). School documents included the school handbook, which went into detail about the school policies, and short excerpts on ICT usages were collected. In addition to these documents, information relating to policies as directed by the Ministry of Education and the Ministry of Information and Communications Technologies regarding professional development and technology integration was gathered. These documents assisted with understanding the participants' familiarity with and experiences utilizing ICT tools and support from leadership. Moreover, the information collected assisted with the coding analysis due to prior knowledge of what the interviewees communicated about the technology implementation training they received.

An additional method was a focus group discussion. A focus group offered the opportunity to detect broader viewpoints and perceptions of teachers for comparison. The focus group allowed for a more thorough and comprehensive evaluation of the qualitative data and contributed to the themes found from the interviews of teachers and the leadership. The primary

director assisted with soliciting participants from their cohort. The primary director provided information about the case study and asked for those interested in participation to contact a teacher who served as the liaison for the school and myself. The liaison communicated with participants to determine a time to hold the focus group discussion. Originally, there were only 8 participants for the focus group discussion. But right before the meeting, 5 more teachers were able to partake in the discussion. The 5 participants who joined the discussion last minute were informed to read and sign the consent form prior to joining the Zoom call.

The focus group was held via the Zoom platform. The session lasted roughly 90 minutes. The focus group protocol (see Appendix B) was used to conduct the focus group discussion. The protocol served as a guide for the questions that were asked. The questions were organized and asked under five of the six categories described by Rosenthal (2016) as sensory, experiences or behaviors, opinions or values, knowledge, feelings, and background questions. Questions about background were not asked; more specifically, questions regarding grade level and subject were asked. Some participants gave that information willingly. However, questions surrounding the teachers' past or present experiences or actions encompassing ICT usage in the classroom were inquired. Next, follow-up questions were asked from the sensory category, probing about an actual physical experience. This helped the interviewees recall other experiences, feelings, and more.

Conversely, the questions surrounding opinions were intended to stimulate the participants' thoughts and understanding of a specific occurrence or experience (Rosenthal, 2016). They also provided explicit knowledge of participants' intentions and goals (Rosenthal, 2016). The knowledge questions pursued factual and truthful information from the participants

(Rosenthal, 2016). Questions regarding feelings aimed to extract a depiction of emotion from the examinee (Rosenthal, 2016).

The questions for the focus group were impartial and open-ended (Rosenthal, 2016). This meant that the questions did not create expectations or reveal clues to what the researcher anticipated the interviewee would say (Rosenthal, 2016). Moreover, the questions reflected one topic at a time (Rosenthal, 2016). Therefore, questions started with an experience, elaborated on that, and then moved to sensory information and so forth. The purpose of focus groups involved "balancing between the need to obtain a detailed experiential description from interviewees, without sacrificing the equal representation of experiences across the population of possible participants" (Rosenthal, 2016, p. 511). Note that the focus group with the one-on-one interviews gave equal representation and provided more profound data for the study. Once the focus group discussion concluded, dictation of the audio files to transcribed text occurred for further examination (FitzPatrick, 2019; Rosenthal, 2016). After the transcription was drafted, the translator then translated the transcription from Spanish to English.

A qualitative analysis contains a thick description that compels the reader into the setting, content, background, and focus group content (FitzPatrick, 2019; Rosenthal, 2016). After reading and rereading transcripts and the translations to the interviews and documents collected, the recurring ideas and phrases were highlighted, coded, categorized, and assigned themes (FitzPatrick, 2019; Rosenthal, 2016). Lastly, a reflective journal (analytic memos) that documented my code choices, coding processes, thoughts, and challenges was included throughout the analysis process. The analytic memos strengthened the methodological approach and trustworthiness of the study. Analytic memos are defined as "reflective narratives that expand and expound on observations" of the methodological process (Saldaña & Omasta, 2018,

p. 54). The decision to include analytic memos helped synthesize my observations of data collection and analysis, and it served "as first and revised drafts of theories in progress" (Saldaña & Omasta, 2018, p. 267). These memos helped with unanswered questions, prospected directions, and constructed astute connections to the analysis. In short, analytic memos were an excellent way for me to record the research process and help readers understand my thoughts (Rogers, 2018).

Methods for Trustworthiness and Rigor

Trustworthiness can be defined as revealing enough detail of the analysis methods that display credibility in a qualitative study (Herr & Anderson, 2015; Leavy, 2017; Nowell et al., 2017; Saldaña & Omasta, 2018). Trustworthiness also demonstrates a data analysis that is dependable and reliable in a qualitative study (Herr & Anderson, 2015; Leavy, 2017; Nowell et al., 2017; Saldaña & Omasta, 2018). Conversely, Lincoln and Guba (1985) stated that trustworthiness involves analyzing data done by researchers and making sure it is credible to those who provide the data. Also, "trustworthiness speaks to the quality of the project, the rigor of the methodology, and whether readers of the research findings feel you have established trustworthiness" (Leavy, 2017, p. 154).

Using a triangulation strategy helped establish validity or trustworthiness (Leavy, 2017; Sherman, 2018). Triangulating the data is a commonly used strategy for using multiple methods or data sources to address the same question (Leavy, 2017; Shenton, 2004). Triangulation is described as employing various methods that serve as key "data collection strategies for most of the qualitative research" (Shenton, 2004, p. 65). When collecting data, the use of a triangulation strategy ensures a study has trustworthiness and provides a convergence of evidence that produces credibility (Eisner, 1991). Additionally, a triangulation strategy assists with providing

trustworthiness for case studies (Crowe et al., 2011). In particular, data triangulation refers to

using multiple data sources to examine an assertion (Leavy, 2017). For example, interviews, a

focus group, and document analysis were the data collection methods in the triangulation

strategy, with analytic memos being an additional method. Also, each qualitative research

approach has "specific techniques for conducting, documenting, and evaluating data analysis

processes, but it is the individual researcher's responsibility to assure rigor and trustworthiness"

(Nowell et al., 2017, p. 2). Using a triangulation strategy assured that this study exhibited

trustworthiness. Furthermore, notes created in a reflexive journal or an analytic memo became

auditable evidence to support the study's trustworthiness (Lincoln & Guba, 1985; Nowell et al.,

2017). According to Rogers (2018), a terrific way for researchers to record the research process

is through "reflective commentary or analytic memos" (p. 890). Leavy (2017) stated that an

"inductive and iterative process of data collection, coding, categorization, and analytic memo

writing helps formulate a theory to explain the study under investigation" (p. 150).

Data Analysis Methods

Qualitative researchers frequently omit comprehensive descriptions of how analyses are

conducted (Nowell et al., 2017). However, there have been disputes about the need to be more

lucid about what researchers are doing and why they are doing it and to include a clear

description of analysis methods (Nowell et al., 2017). Readers must have a clear outline of how

data are analyzed and the assumptions of the researcher's analysis (Nowell et al., 2017).

Nonetheless, every qualitative research approach assists in straightforward methods for

documenting, evaluating, and conducting data analysis (Leavy, 2017; Saldaña & Omasta, 2018).

Leavy (2017) discussed five phases of analyzing data in qualitative research. The five

steps include preparing and organizing the data, preliminary immersion, coding, categorizing and

theming, and interpretation. Data preparation and organization involve transcribing data (e.g.,

transcribing recordings of interviews; Leavy, 2017). After interviews were completed via Google

Forms, personal identifiable information was extracted. Then the interviews were given to the

translator to translate from Spanish to English. After the focus group discussion was concluded,

the audio file was sent to the translator to transcribe and translate from Spanish to English.

Additionally, after the documents were collected, the documents were sent to the translator to

translate from Spanish to English. Subsequently, the second translator was given the translations

to ensure that the translations were accurate for member checking purposes.

Following the translation of all data collected, the second phase of analyzing data in

qualitative research began—organizing data. Organizing data involves sorting, using different

systems that help the researcher, like color-coding files, highlighting, and so forth (Leavy, 2017;

Saldaña & Omasta, 2018). Leavy (2017) stated, "Immersion allows you to gain deep emotional

insight into the social worlds you study and what it means to be human" (p. 150). In other words,

immersion helps to engage in the data entirely, develop initial ideas, and prioritize the data for

analysis by "noting which data will best help address the research purpose and answer the

research questions" (Saldaña, 2014, pp. 583–584). The data were organized by research question.

Research Question 1 contained data from the primary teacher interviews. Research Question 2

contained data from the focus group discussion. Research Question 3 contained data from the

primary teacher and leadership interviews, focus group discussion transcription, and document

analysis, while Research Question 4 contained data from the primary teacher interviews coupled

with document analysis. Since three out of the four research questions involved primary teacher

interviews, the coding process included different-colored highlights to distinguish between the

research questions.

Subsequently, after all the data were prepared and organized, the coding process took place. Coding is used to reduce and classify data by assigning words or phrases to the data segments (Leavy, 2017; Saldaña & Omasta, 2018). Concurrently, Saldaña and Omasta (2018) stated four types of coding: in vivo coding, values coding, emotion coding, and process coding. For this study, in vivo coding and process coding were used since these can "keep the analysis grounded in the participant's language and help find key actions that drive the interest" (Saldaña & Omasta, 2018, p. 150). Due to the number of participants, computer-assisted software (CAQDAS) to assist with coding and establishing themes was unnecessary. Although Nowell et al. (2017) confirmed "software can enable the researcher to work efficiently with complex coding schemes and large amounts of text, facilitating depth and sophistication of analysis" (p. 7), manual coding was used.

According to Leavy (2017), a coding approach related to the research purpose, questions, and what the researcher wants to discover from the data is ideal. Therefore, in vivo coding and process coding helped grasp how teachers genuinely feel and how their attitudes about ICT in the classroom affected ICT utilization. The coding types also emphasized "participants' voices in the data" (Rogers, 2018, p. 890). The coding process began with going through each interview and highlighting words and phrases that seemed relevant and significant to answer Research Question 1. Then, I went through and did the same thing for Research Question 3, using a different color. Subsequently, the same process occurred for Research Question 4. For Research Question 2, I created a two-column chart using Microsoft Word. On the left side of the chart, the transcription of the focus group discussion was placed. On the right side, I typed words and phrases that appeared relevant and essential to Research Question 2. I also highlighted the words and phrases in two different colors to differentiate between in vivo and process codes. For

example, in vivo codes were the participants' own words, where process codes were action words like "adapting," "implementing," "supporting," and so forth.

Next, categorizing and developing themes took place after the coding process was finished. This process involved grouping words, phrases, and related codes together (Leavy, 2017; Saldaña, 2014). I used a blank Word document to copy and paste the phrases and words from the transcribed interviews, focus group discussion transcription, and document analysis. The words and phrases were color-coded so that I knew what research question they belonged to. Then I went through each of the words and phrases and tallied how many times it was mentioned while deleting the extra words and phrases. When themes began to emerge, I placed them in bold and used a bigger font size. Next, I read through the list again, compared them with my analytic memos, and highlighted words and phrases that matched with the themes. Afterward, I read through each transcription and the documents to highlight what I planned to present the results and support my findings. Additionally, I created a concept map using the code words and phrases during the analysis process to organize and categorize the themes (Akinyode, 2018). The concept map helped in creating organized themes presented in the data, and the map assisted in creating a chart to present the themes clearly in Chapter 4.

Moreover, the analytic memos contained thoughts about the data, specific codes, and how they connected to the literature or theories. Throughout the data collection process and the data analysis portion, I created memos and notes about my thoughts, any code words or themes that came to mind, and how they connected to my theoretical framework and the research. The memos assisted in written considerations that I went back to and made comparisons with after rereading the transcriptions and documents over again. Leavy (2017) indicated, "Writing descriptions or summaries about your coded data creates interpretive ideas about how a theory or

piece of literature relates to a segment of coded data" (p. 152). Finally, the interpretation piece was the last part of the data analysis. The data analysis was used to incorporate the memos and assisted in tying the literature and the theoretical framework to the data collected. The goal was to find associations between ICT usage and attitudes of teachers and transformational leadership. I made comments in the Word document and on the transcriptions to note characteristics that characterized transformational leadership traits and noted where certain phrases, examples, and responses demonstrated and supported the theories to interpret the results.

Researcher's Role

Sutton and Austin (2015) stated that a researcher's role in a qualitative case study is to assess the feelings and thoughts of participants. Also, my role as the researcher is to understand why participants have those feelings and thoughts, which provides the foundation for a qualitative study (Sutton & Austin, 2015). Moreover, the principal role of a researcher is to protect the individuals who participate in the collection of data. Another responsibility of the researcher is to communicate to the participants about the study. I communicated through the liaison that assisted with communication between participants and myself. There was also a statement about the study and how participants could withdraw at any time, placed at the top of the Google Form for interviews and in the consent form.

Additionally, for the focus group discussion, the liaison informed participants about the study after the director sent the email. The liaison also sent out an email. Before the focus group discussion began, I too spoke about my study from the focus group protocol and informed participants that they could withdraw from the discussion at any time and choose not to answer a question. I ensured that participants understood that their data would be protected. Furthermore, reducing bias and being honest represent another obligation that the researcher has. I am not an

employee at this school, nor do I have a relationship with anyone at this school; therefore, there was no bias.

Ethical Considerations

The institutional review board (IRB) at ACU approved this case study (see Appendix C). Once approval was received, I reached out to the director of the school. The director sent out an email that solicited participants and included the liaison to assist with communication. Participants were provided with a flyer about the study and a consent form containing information about the study. Notably, the information was provided in their native language. Additionally, I went over all items pertaining to the study with participants, including the study's purpose, the confidentiality of responses, and replacing identities with pseudonyms. Moreover, the participants were informed that participation in this study was voluntary and that they may retract at any point. Thankfully, I did not have any participants who withdrew from the study, but I had 3 extra participants decide to join at the last minute.

An additional ethical consideration was the translation of the data. Roth (2018) stated that analytical and ethical challenges are present in interpretations of translations. Interpreting data can either preserve or elude the propositions of conjectural theories during the process of translating documents from one idiom to another (Roth, 2018). Conversely, Alwazna (2014) stated that for something to be considered successful, it needed to be assimilated into the dominant language; otherwise, it would not be mentioned to and quoted as an essential text. Therefore, translation has its explicit "code of ethics," which the translator has to regard (Alwazna, 2014, p. 55). This implied that the translator could withdraw from the study if confronted with unpleasant text. Also, if she could not discover a balance in generating a translation that could aid the study's purpose or if she had trouble respecting translation ethics,

the translator could withdraw from the study (Alwazna, 2014). However, the translator who transcribed and translated the interviews to English had no problems, as she had transcribed for the U.S. Embassy for several years. Also, for member checking purposes, a translator from a different department at the U.S. Embassy reviewed the transcriptions to ensure that the translation was accurate. This process took longer than expected, but the translations were accurate.

Finally, due to the case study being conducted outside of the United States, ACU advised that I had to go through the IRB process at a university in Colombia. The universities in Colombia used a different term, such as "ethics committee." The ethics committee does the same thing as the IRB and ensures that participants are protected, protocols and policies are followed, and guidance is given. Documentation must be provided from a local university to begin the IRB process for ACU.

I reached out by email and phone to several universities in Bogotá, requesting assistance from their ethics committee. Staff at one university attempted to assist, but due to my not being a student with them, they could not help. Another representative from a different university abetted my request. This individual is a lawyer, teaches law at a public university, and sits on the university's ethics committee. He wrote a letter addressed to ACU and stated that my study was in compliance with Colombian laws. I then emailed the letter to one of ACU's board members. The IRB board accepted the letter. The ethics committee at this public university in Bogotá was not involved further during the study.

Assumptions

There were a few assumptions with this case study. There was the assumption that the selected participants would answer the interview questions truthfully and clearly. Additionally,

there was the assumption that there were no concealed motivations to participate in this study. The last assumption was that no challenges would be encountered when conducting Zoom interviews and translating all the documents. In fact, there was a challenge presented during the beginning of data collection. As mentioned before, I could not conduct Zoom interviews due to the ongoing protests and riots. The liaison asked me to send the interview questions, which were sent via Google Forms. Another challenge arose during the Zoom focus group discussion, where some participants lost service and had to log back in, which created disruptions at times during the discussion.

Limitations and Delimitations

Using only one school from one district in an urban area was a limitation as it represented a small sample size. However, small sample sizes are fruitful for qualitative studies. Small sample sizes can be a drawback if some participants opt out of the research or just do not respond at all. Luckily, none of the participants dropped out of the study. Also, another drawback was that the Census Department did not have all of the statistics about the population that resided in the study's site. Relying on a secondary source made obtaining the information I needed specific to this case study difficult. Limitations are contexts and occurrences out of the researcher's control that can affect the study's outcome (Simon & Goes, 2013).

Simon and Goes (2013) defined delimitations as the limitations and decisions made by the researcher when creating the study scheme. I chose a transformational leadership style even though there are many other leadership philosophies from which to choose. Additionally, I decided to utilize D. Kolb's (1984) experiential learning theory and Knowles's (1973) andragogy theory for the theoretical framework for the study, when there were a plethora of theories to choose from.

Chapter Summary

In this qualitative study, I aimed to gather data on the latitude of teachers' feelings about the use of ICTs. This study established that transformational leadership affected teachers' attitudes and usage of ICTs in urban schools in Colombia. Although some transformational leadership traits were not presented as notably as others, leadership did assist teachers in the way they knew how. But one trait was evident that leadership did not demonstrate: motivation. Teachers inspired and motivated themselves. A triangulation strategy was used to collect data, which gathered sufficient information and provided a trustworthy and reliable analysis. In Chapter 4, the data collection, analysis, and results are explained in great detail.

Chapter 4: Results

The purpose of this qualitative case study was to establish if transformational leadership influenced teachers' attitudes about the usage of ICTs in an urban school in Colombia. The qualitative methodology for this case study included interviews via Google due to the ongoing protests and riots. A 90-minute focus group discussion was conducted, and documents and correspondence were gathered for document analysis. The data were collected and analyzed to answer the research questions.

In this chapter I will explain the outcomes of the analysis of the composed data from 16 primary teacher interviews, four leadership interviews, a focus group discussion, analytic memos, and document analysis. In addition, I will discuss in what way the collected data addressed the research questions. Therefore, Chapter 4 is arranged in this way: depiction of participants, emerging themes, display of findings, and summary of findings.

Depiction of Participants

An email was sent to the director of this urban school to send out a flyer to primary teachers and staff in leadership positions. The flyer sought participants of members who had taught for at least 2 years and who were part of primary education at that school. The director then delegated a teacher to assist in the process of email correspondence with me. Additionally, this entrusted teacher collected the interviews via Google Forms, where teachers and leadership personnel, including the director, clicked on a link to complete the interview questions. Originally, interviews were to be conducted via the Zoom platform. However, due to the riots and protests that affected every major city in Colombia, the director felt it best to conduct the interviews using Google Forms, which allowed the teachers to fill in their responses on their own time. Moreover, the director also insisted that all school personnel were required to participate in

the riots. This then contributed to time constraints already set in motion for the interviews and focus group discussion. Luckily, the teacher who served as a liaison for the school helped ensure that teachers completed the interviews via Google Forms and set up a time and date to host the focus group discussion.

Approximately 38 primary teachers were solicited for this study. However, only 16 elected to participate in the interviews, and eight chose to participate in the focus group discussion. A few days before the scheduled discussion, five additional teachers decided to partake in the study. This gave a total of 13 primary teachers for the focus group discussion who did not join in interviews. The leadership interviews included four out of the six leadership members due to two of the individuals not responding—therefore totaling 33 out of 44 requested participants.

Table 1 presents a breakdown of the demographics of the interviewees. Table 2 presents the demographics of teachers who partook in the 90-minute focus group discussion.

Table 1

Participant Interviewee Demographics

Participants	Gender	Level of education	Years teaching	Years at the school
Teacher 1	F	Master	27	11
Teacher 2	F	Master	12	2
Teacher 3	F	Bachelor	9	9
Teacher 4	F	Bachelor	11	3
Teacher 5	M	Bachelor	24	20
Teacher 6	F	Bachelor	20	7
Teacher 7	M	Master	14	10
Teacher 8	F	Master	16	16
Teacher 9	F	Bachelor	10	10
Teacher 10	F	Master	4	4
Teacher 11	F	Master	10	10
Teacher 12	F	Bachelor	2	2
Teacher 13	F	Bachelor	2	2
Teacher 14	M	Master	11	11
Teacher 15	F	Master	14	14
Teacher 16	M	Master	17	11
Leadership 1	M	Master	3	9
Leadership 2	F	Master	4	4
Leadership 3	F	Master	14	14
Leadership 4	F	Master	8	8

Table 2

Participant Focus Group Demographics

Participants	Gender	Level of education	Years teaching	Years at the school
Teacher A	F	Master	15	9
Teacher B	F	Master	22	19
Teacher C	F	Bachelor	13	6
Teacher D	F	Master	10	10
Teacher E	M	Master	17	8
Teacher F	F	Bachelor	13	11
Teacher G	F	Bachelor	24	18
Teacher H	F	Master	16	12
Teacher I	F	Bachelor	27	23
Teacher J	F	Master	18	4
Teacher K	M	Master	12	6
Teacher L	F	Bachelor	11	9
Teacher M	F	Bachelor	9	9

Emergent Themes

The purpose of this study was to discover if transformational leadership influences teachers' attitudes about the usage of ICTs in an urban school in Colombia. Reading and reviewing the transcripts of the focus group discussion along with interviews numerous times and the analytic memos allowed for a comprehensive analysis of the codes. While revising and reexamining the codes, emergent themes evolved (see Table 3). The emergent themes provided awareness to primary teachers' attitudes, challenges, and experiences with ICTs. The emergent themes also showed a lack of a few characteristics that make a transformational leader. Thus, the themes, along with the thorough analysis of all data collected through interviews, focus group discussion, and document analysis, provided answers to the following research questions:

Table 3

Emergent Themes by Research Questions

Research question (RQ)	Theme 1	Theme 2	Theme 3
RQ 1	Internet Access	Fear and Forced Use of ICTs	Training Ourselves to Use ICTs
RQ 2	Enriching Experiences	Complex and Complicated	Teams Platform and WhatsApp
RQ 3	Ability to Collaborate	Leadership Delegates	Support
RQ 4	There is Digital Literacy Thanks to the Pandemic	A Lot of Students and A Lot of Situations	Positive Attitudes

RQ1: What challenges do primary school teachers encounter when they attempt to assimilate ICT into their lessons?

RQ2: How do primary teachers describe their experiences regarding ICT integration?

RQ3: What role does transformational leadership play in the availability of resources and support of classroom technology implementation?

RQ4: How have teachers' attitudes changed regarding technology use with a required practice of ICTs during the COVID-19 pandemic?

Analytic Memos

The analytic memo noted thoughts, impressions, reactions, code choices, themes, and ties to elected theories chosen for this study. The notes were written after reviewing each interview, during the focus group discussion, after reviewing focus group discussion transcripts, and during the review of the documents collected. Two rounds of coding were conducted. The first one included both in vivo and process coding. As stated in Chapter 3, in vivo and process coding is necessary to "keep the analysis grounded in the participant's language and help find key actions that drive the interest" (Saldaña & Omasta, 2018, p. 150). In vivo coding highlighted participants' words and voice, while process coding emphasized the participants' actions, like "adapting," "implementing," and "supporting." Both contributed meaning to the data.

The second coding round was to review the data again, jot down notes, and then compare the two. Conducting two rounds of coding was helpful as there was already a display of patterns that emerged. A foundation was created for the analysis, focusing on confirming what was collected, complementing initial findings, and viewing interpretations on certain codes. In some instances, the codes fit well; in other instances, new codes emerged, which facilitated the reorganization of the codes. A chart was created using Microsoft Word to highlight the codes and insert thoughts. Then to organize the codes under themes, a list was created on Microsoft Word as well as a concept map. Nonetheless, the analytic memos throughout the collection and data analysis were used to help consolidate codes and develop themes.

Research Question 1

Research Question 1 was designed to uncover the challenges primary teachers face when they attempt to utilize ICTs in their lessons. With the growing use of ICTs in daily instruction, the implementing practice has undergone many changes—some stimulating and others challenging. The following three themes emerged through the coding process: internet access, fear and forced use of ICTs, and training themselves to use ICTs. The internet was stated as a challenge due to the inability to reach all of their students, including the capability to download certain applications. Also, many teachers feared not being able to comprehend the new applications that were to be utilized and were afraid of failing and letting down their students. The majority felt forced to use ICTs and felt it essential to use certain applications. The obligation to utilize ICTs led to almost all teachers training themselves on new and required ICTs.

Theme 1: Internet Access

The Ministry of Education has already been trying to provide more internet connectivity across Colombia. However, internet connectivity appears to be a continuous problem, especially for students who reside in the lower social (Guillermopreito, 2020; Jessel, 2017). The challenge of internet access has affected the capacity to teach using ICTs and its ability to be utilized by students who lack the technology and the means to download the necessary applications. Twenty out of 29 teacher participants stated that internet access was a challenge, and oftentimes, teachers had to search for other ways to provide those students with a similar activity. As described by Teacher 2:

Some students do not have access to the internet service, which means that they cannot take full advantage of the proposed activities. The variety of activities are found on the Web, but sometimes they do not align with class goals or student performance level[s].

Additionally, 15 out of the 29 participants agreed that the "hardest" and most "difficult" challenge to implementing ICTs is "due to the lack of internet access." Teachers have to "seek other strategies" to "reach everyone." As Teacher 15 stated, "The hardest challenge is the internet access due to sometimes we spend several days without this service." Having many days without internet access required teachers to invent other methods of getting material to students. Eleven teachers "printed worksheets and dropped them off" to students so that they were able to complete work and not "fall behind." Teacher 5 gave the following example:

At home, there is no access to the internet, there is no money to pay for a data package, so the teacher should start looking for ways to guide the students. Asking their selves, "How could I deliver the study resources or handbooks to students? How could I communicate with them?"

Conversely, three teachers believed that different generations were more "technology advanced" and wanted "to learn more with technology"; however, there were "shortcomings" that prevented ICT usage for students. Many teachers stated that the parents resisted "either due to lack of internet or knowledge." Comparably, parents were not able to assist students with logging on or accessing certain applications, as most parents of "this generation" are not digitally literate. In regard to generations, Teacher 6 described this new cohort of students as follows: "Many students who belong to this generation, with supposed access to technology, are students who cannot access internet services or technological gadgets."

Not having access to the internet has forced teachers to find alternative methods and ways to provide meaningful and fun modalities of learning for those students. As Teachers 1, 2, 4, 6, 8, 12, and 16 stated, "It is more difficult for students to enter different platforms" due to the lack of internet access. Meanwhile, Teachers 9, 10, and 14 stated that they have to "search for applications that they can open well" and ones that "they do not have to download." Nonetheless, there is no doubt that many other challenges prevent teachers from utilizing ICTs in their lessons; however, internet access has been the "hardest" and "most challenging" one.

Theme 2: Fear and Forced Use of ICTs

Upon analyzing the data, another theme appeared: fear. As previously mentioned in Chapter 1, the main issue centers on being digitally literate among educators and students in ICT and other core competencies in Colombia (Rojas-Rojas, 2018). Teachers who are not digitally literate are the ones who lack experience and knowledge using ICTs. Fear was another challenge that affected primary teachers' utilization of ICTs in their lessons. Teacher 1 stated the following:

What changed in me? The fear. As I did not handle ICT because I was afraid to make mistakes. As I did not know how to use them, I thought I would use them badly or that I definitely could not handle them, but I learned to overcome the fear.

Teacher 13 described her fearful experience of learning to use a new application as follows:

It happened to be like that of my partner XXXXX, after leaving the fears . . . as if things are going to turn out well or not. The first meeting was very scary; one said it would be that, yes, it would be that, no, but good, thanks to God, and already with the first meeting,

it was magnificent, and even though the population I work with is almost all rural,

therefore; it is always more difficult for them to enter the different platforms.

After all, teachers stated "there is always a fear" when it comes to something new and

"unfamiliar." Teachers expressed that they did not want to mess up or that they would not be

good at using ICTs. Three teachers portrayed their fear of "misuse" of virtual learning and

"engagement of students in virtual modalities." Moreover, Teacher 9 worried, "There is always a

fear that the student feels cheated" in not being able to "learn all they want about technology."

Due to the pandemic, all schools were forced to acquire certain applications and software

to implement virtual learning. This created not only a fear in the teachers who were digitally

illiterate but also a fear of having no choice or free will to make decisions on what applications

could be utilized. Teacher 5 described his belief and the challenge of whether teachers want to

use ICTs or not:

> But I think that indeed what has happened, what is happening, establishes a breaking
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> point in the history of education, right? From our point of view, let's talk about Colombia
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> or let's talk about Bogotá, or our school, as such, why did it change? Because it forces a
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> change in the methodology, and I think that, more than a change, let's say that, in
>
> essence, it is a change that is linked to the incursion of technological tools in our daily
>
> work. Each one is tied to a model and all this, but I do believe that the incursion of
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> technological tools is going to be like that additional value. Now, the incursion of
>
> technological tools, either if you want it or not, will happen, either it is given due to
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> teachers' willingness, who is aware that ICT should be used, is passionate about
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> venturing into the subject of technology, or on the other hand because it is going to be the
>
> same student who will demand the implementation of those technological tools.

By the same circumstance, interviewees reported that the "topic of virtuality" has been a situation "that forces us all to access technology." Teachers were forced to adapt to using an online platform only. The mandatory use of ICTs incites emotions and feelings of the forcefulness of utilizing a tool or resource that they know nothing about or prefer not to use, or it warrants a new discovery of how they can teach their students. Teacher 1 described her experience as follows:

I feel at this moment. I went back to the prehistoric era, from here, from the internet, to find how to reach my students and how to support them from my position. I had to learn a lot, and every day I am learning because although my IT colleagues have wanted to teach us many things and supporting us with their knowledge, it is not the same, and it is complicated.

Nevertheless, the theme of fear and being forced to use ICTs demonstrates another theme within the data, where teachers trained themselves to use ICTs. They had to learn to utilize a tool forced upon them that should require training and professional development. One would think that full training was given to teachers, but this has not been the case according to the majority of the teachers in this study.

Theme 3: Training Ourselves to Use ICTs

Surprisingly so, many teachers stated that they "taught themselves" and "sought assistance from other teachers and colleagues." Of the 29 teachers, 12 stated that they "watched tutorials via YouTube," while 17 teachers stated they received help from "friends and colleagues more skilled in ICT usage." Teacher G stated that her experiences between private and public were opposites. At the private schools, they "give all types of training on applications to their

staff." But, with public schools, "All teachers have to learn on their own and seek assistance from others if they could not figure it out." Teacher 12 described her challenge when she stated,

> Honestly, I had little contact with ICT within my pedagogical practice; however, when we began in virtuality, obviously I could not get stuck, but I started to search and train myself on different strategies and platforms under which I could work with children, at least Google Meet, educational platforms, such as Educaplay, learning how to use CISCO, learning to deal with Zoom.

This experience illustrates just one of the many responses of teachers learning to use different applications on their own and get help from others. However, it was found that three teachers mentioned a program called Digital Knowledge where teachers are trained on new technology tools which require teachers to go back to their schools and coach and guide everyone else. The hope is that teachers from this school can be elected to receive training so there would not be a continued reliance on the same individuals. Results also revealed that eight teachers and all four leadership personnel stated that the Secretary of Education provides some training on certain applications. Teacher 7's response detailed his experience when he stated,

> I searched for training on educational platforms from the Secretary of Education. I watched video tutorials online to learn to handle tools and platforms. I recorded tutorial videos to guide parents or caregivers about some processes as uploading videos and tasks to the Teams platform. I also ask for guidance and training from some fellow teachers who are computer experts.

According to OECD (2020a), 75% of teachers in Colombia reported that they receive ICT in training and education; however, from the 2018 TALIS, 34% of teachers stated there is a significant need for ICT professional development for teaching. It is clear that training is lacking

at this specific school and that teachers continue to teach themselves and search for support from various places. As various teachers described, "It has been a challenge to learn and teach." Teaching virtually has required teachers to "seek training to face the situation" while looking for "better tools."

Research Question 2

Research Question 2 revealed primary teachers' experiences regarding ICT integration. Through the coding and analysis process, emergent themes indicated that primary teachers' experiences were both positive and negative regarding ICT integration. Most teachers described their experiences as "enriching," while others labeled their experiences as "complex and complicated." Additionally, two applications were frequently stated. The Teams platform was mentioned in more than half of the interviews and described by seven out of the 13 participants during the focus group discussion. WhatsApp was the other application discussed. This application was mentioned throughout the focus group discussion and in 10 out of 16 primary teacher interviews.

Theme 1: Enriching Experience

Merriam and Bierema (2014) affirmed that important occurrences or accrual of experiences in an individual's life that come together foster a transformation. This is evident in the teachers' responses with respect to ICT integration. At the beginning of the pandemic, teachers were not trained on many ICTs that were available or accessible globally. While some teachers felt their experiences were negative and still do, others shared the complete opposite sensation. Teacher A stated,

> It was an enriching experience. Although, at the beginning, it wasn't because I did not
> have previous training about it or experience using different technological and virtual

tools. Every day, with the school's and the Secretary of Education's support and through my own research, I have been able to develop skills in ICT management and implementation.

Teachers have described experiences of the integration of ICT as "enriching" and "a change" to previously used methodology. Two teachers mentioned the "use of filters," applications, and videos that students are "excited to look at." Information communication and technologies have motivated students to log on and participate in class more often. In the past, before the forced use of ICTs, teachers stated that "WhatsApp" was the primary application used to reach students. Now, with teachers' experiences and new knowledge on ICTs, they are able to expand their experiences and methodology. Teacher B described her experience:

But, yes, it has been stunning, I liked it a lot, and one is exploring other platforms, other filters, that many made for children who cannot be synchronously, and many filters are so funny, and the children get excited, the mothers always say, "Teacher the children always want to see the videos because they are hilarious," so it has been a very enriching experience, and a lot has been learned because practically what was handled was WhatsApp, no more Facebook, regular platforms, but right now, if we have had to investigate and learn a lot more, then it has been quite an experience, quite enriching, and highly amusing, thank you very much.

Comparably so, experiences across the board for primary teachers have shown to be both positive and negative. The familiarities of ICT integration have been "enriching" and have "created new learning experiences through ICTs." However, teachers' experiences with ICT integration have become more "positive and changed due to the use of them daily, and as a consequence, I am more skilled," as one teacher explained. Particularly, three math teachers

stated that ICT integration has made the "assessment and evaluation process" simpler and "less time-consuming." Teacher C stated that students being able to take an exam online has "made it easier to grade" and to "provide step-by-step instruction on questions missed." While the second math teacher, Teacher E, described his experience as "changed." He stated, "Before, I did not think the use of ICT was important," and he preferred to teach math the old-fashioned way. Now, he enjoys using ICTs in his lessons, and it "allows the students another method to assist with learning and completing assignments."

Nevertheless, the third math teacher, Teacher H, described her experience with ICT integration:

> It has been very enhancing to work on mathematics, and the students have learned a lot. They have noted the commitment and effort that teachers put into the teaching cycle to approach and teach them what must be learned. We already started with the alternation in March approximately. The alternation cycle began because the rooms were equipped with cameras, microphones. It's great to know that there are a certain number of students in the classrooms, and other students are at their houses taking the classes simultaneously. The whole group can interact in real-time. The experience has been great and has enriched the teaching of math.

In closing, the "enriching" experiences of primary teachers have been exceptional. The implemented practice has provided new teaching methods and interactive activities and has shown the capability of ICTs and how they can be used now and in the future. Although most teachers have been pleased and inspired to learn more, there are teachers whose experiences have been adverse, "traumatic," "complex," and "complicated."

Theme 2: Complex and Complicated

As discussed under Research Question 1, Theme 1, internet access, or lack thereof, was the main challenge for teachers to implement ICTs. Among other challenges, teachers shared their experiences, good and bad. Theme 1 discussed my findings, which included positive and "enriching" experiences. Theme 2 revealed the experiences described by teachers as "complex" and "complicated." As Teacher G stated,

The truth is the teaching process is more complex now due to ICT. It does not allow us to know if the concepts are completely understood by the students. Furthermore, there are too many students, and the way to evaluate them is complicated.

Eight teachers believed and experienced adverse effects of trying to implement ICTs into daily instruction. Three out of eight teachers stated they believed it depended on a "teachers' age" and that some teachers loved to use ICTs while "older ones rather avoid using them because it is too complicated." Although teachers stated challenges and described feelings of "exhaustion," "joy," "contentment," and "fear," the practices and resistance of teachers continue. Teacher F described her experience:

Many teachers still resist change and prefer to find a way to continue with traditional activities. It makes it challenging and complicated when we are not all doing the same thing. On the other hand, some colleagues have been adapting to changes and have been improving their skills regarding ICT and its implementation in their daily practice. There is also another group that belongs to a younger generation, and they have a lot of advantages in ICT usage. It has been a bit traumatic since we were not and are not well prepared for that challenge. The things we have been doing have been of our own free will and not because of an institutional or governmental initiative.

My findings not only indicated that some teachers were still resistant to change, but three out of six teachers who taught math found it more "complex," especially when it came to the inclusion of students explaining their work. Teacher K described his experience:

I used to enjoy using ICTs more before this experience. Now its usage is more demanding and exhausting. I am required to do the work through apps, including written mathematical processes and those that can be done with apps. Additionally, not all the students have the required software. It makes it complicated to reach all students, and I have to put together work for students who do not have the required software or access.

My findings also show that challenges are created, as teachers have to generate different tasks for students who do not have access. Moreover, teachers then choose to give assignments that do not involve a digital component. Four teachers described their experiences with ICTs as a "dramatic change" and that ICTs were not "the main target of the teaching process." Teachers had to "modify" and "adapt" lessons. The digital divide is evident such that not all "students have access" nor do teachers have the training, resources, and experience with ICTs, specifically new applications. The main training teachers had was the Teams platform. Even then, the training appeared to be self-taught through a link.

Theme 3: Teams Platform and WhatsApp

Before the pandemic, teachers used WhatsApp to communicate with students and send work or receive work on occasion. It was also a way to communicate with parents. But when the pandemic hit, it appeared that the school started to implement virtual classes on the Zoom platform. However, due to "having to get a license to use Zoom for more than 40 minutes," the school switched to Teams. Every teacher from the interviews, along with Teachers A, B, C, E, F, K, L, and M from the focus group discussion, mentioned the Teams platform. The leadership

participants discussed the Teams platform as well. The Secretary of Education "chose Teams" and provided training on Teams by "video recordings" or the technology teacher sharing a "How to Use" tutorial. Teacher M stated the following about her experience with Teams:

> How to use the Teams platform. The technology teacher recorded videos and posted them on YouTube to indicate how to enter. The parents received the videos, and they were posted on the platform on the school page, also, so that the parents know how to enter the classroom, that is, they have sought many strategies so that this reaches everyone, but as I said, it is not easy because not everyone has the internet, not everyone has access to the internet, so we are left there to try and try, but no.

Preceding this response, 13 teachers from the interviews stated, "Teams, I did not know about this tool" and "Now I use it the most today." Although it is the tool that is used consistently, teachers described the discontent of having to learn to use this platform on their own. Teacher J stated her displeasure for acquiring the skill set on this tool:

> Only about Teams and due to its platform chosen by the Secretary of Education. However, my knowledge about it was learned on my own, using it and researching information about it. I wish there was more support or guidance, not just video links or me having to do all the searching.

As referenced before, teachers identified the Teams platform as their go-to instead of Zoom due to technicalities and parents' problems with access. Teacher D described their experience in more depth. Teacher D gave a detailed breakdown about what the Teams platform was used for previously and how it was adapted for educational purposes. Teacher D described her experience:

Now, Secretary of Education, if we are going to talk about the functional part because the

Secretary of Education was not prepared either, and what they also did was start to read

realities and start generating, let's say a reasonable time afterward, spaces and what they

did was to adopt platforms that were business or commercial; for example, the platform

that we use right now, Teams, Teams was not designed for the educational part and much

less for the educational part of the school. Teams were designed for companies, for

company work, so as it started, what it did was look for platforms that were the most used

and generated by appointing to modify them in some way and have basic tools that would

allow us, teachers, to generate spaces asynchronously and others, let's say . . . the rest,

how synchronous it is to receive the tasks, to be able to evaluate the power to review,

those tools were somehow not designed directly for that but were adapted then, and the

other is that, anyway, in the public sphere, as there are quite broad restrictions, among

other things for utilizing, for use due to copyright, for security possibilities; for example,

for students. It is a complex process, and many do not and did not know what Teams was

used for and how we are using it now. There were and are issues. For me, my biggest

issue is parents can never access it.

Another teacher described their experience as follows:

The experience was good; since March 16, 2020, the teachers continued working with

students and monitors through WhatsApp, sending guides, then we learned how to use

the Edmodo platform and Zoom. Finally, in the midyear, we institutionalized the Teams

platform for everything related to the classes.

Nonetheless, outside of the Teams platform being named by almost all participants, the

WhatsApp application was referenced by more than half of the participants. WhatsApp is a well-

known app that allows individuals to make phone calls, send group texts and text messages, and more. In Bogotá, WhatsApp is used not only by businesses and restaurants but also by doctors' offices. It is very convenient as anyone can call or text message their doctor to get a prescription or set up an appointment. Noticeably, the WhatsApp application was used at this school most by teachers and students.

As indicated, because of lack of access to applications due to the lack of a data package or access to the internet, not all students could download the required software or apps for classes. This has been an ongoing challenge for teachers, specifically for the study participants. Teachers have stated that they "have to work with students via WhatsApp" due to "no access." Teacher L described her experience as follows: "As a consequence of being challenged to make the learning process more enjoyable, I tried to develop teaching strategies suitable for those that only have access to lessons via WhatsApp, and for those that have internet access as well."

As described in many interviews, teachers explained that "WhatsApp was the way" they "reached students." Teachers also stated that "WhatsApp was easier" to use for students who could not access the needed software or applications to complete assignments. Jaramillo (2020) stated that the United Nations International Children's Emergency Fund (UNICEF) collected data from 20 countries, including Colombia, and that "60 percent have developed strategies to use mobile technology (WhatsApp, text messaging) or social networks to communicate with students" (p. 16). WhatsApp has become a teaching tool. Zoom or Google Meet "takes up more storage" than WhatsApp and is "simpler" to use. Furthermore, WhatsApp is a more efficient tool for teachers and students who do not have a data package or have limited space on their basic phone or device.

Research Question 3

Research Question 3 uncovered the role transformational leadership played in the availability of resources and support of classroom technology implementation. Transformational leaders form the settings, which empower teachers to be dedicated and motivated to work toward change (Yamamoto & Yamaguchi, 2019). Findings indicated that teachers were very dedicated to working toward change as teachers modified lessons and "strategized" every possible resource they could to "reach students." Additionally, W. Chen (2013) and Yamamoto and Yamaguchi (2019) stated that transformational leaders inspire teachers to transform and reflect on previous and current practices, which is essential for effective ICT implementation. My findings from the interviews, focus group discussion, and document analysis produced the following three themes: the ability to collaborate, leadership delegates, and support.

Theme 1: The Ability to Collaborate

Participants mentioned that teachers "trained other teachers" on new applications and required software for virtual classes. This was due to

managers, and nobody was prepared to take on a digital challenge because our country

was not really like that, really at the level, for example, at school, because university

programs had the distance methodology already, so they could handle virtual resources.

Both directors and teachers adjusted to the circumstances. Three teachers and two leaders stated that they began to "look for colleagues who trained at Saber Digital (Digital Know), [and] what platforms, what resources were available." Teachers and leaders came together to "collaborate and learn from one another." Leader 1 stated, "Each problem is solved by asking for the most experienced ones, doing tutorials that work for both teachers and students."

Teacher 12 stated the following about teamwork and collaboration:

The teachers who knew more about technology, who in some way, what they did was to be advisers to the directors, and in that order, when the spaces for Saber Digital that XXXXX said right now were generated, but not because the directors themselves knew about the tools or did not come to give us the tools, but for more teachers to learn how to explain or train us about the new tools.

According to several teachers and all four leaders, they "have an academic network, which allowed teachers to update themselves in tools." Since the beginning of the pandemic, the network has expanded and improved little by little. Teacher 15 believed that "directors and even the Secretary of Education have learned double or triple from the same teachers." Teacher C stated the "ability to collaborate has been the only reason I believe I have been able to get through teaching virtually." Virtual learning has helped the school and the academic network that has been built to assist one another in acquiring the skills and training needed to progress. Teacher D commented on the previous teachers' commentary about collaboration and Saber Digital:

> It is to complement what XXXXX was saying right now because initially, nobody knew much about technology, but little by little and to the extent that XXXXX says, they were reading the situation and likewise the Ministry of Education, well, at least, to at the institutional level, what we call Saber Digital, was built much more here in Colombia, which is a program of the Ministry of Education that is responsible for training directors and managers in this virtual platforms for educational use. Before, we had no need at school, so we were not very interested in being part of the Saber Digital team, but when we turned to this topic of virtual learning—at least in my case—well, it caught my attention.

Saber Digital has grown popular, as it is a way to collaborate for teachers and directors. This was a method to bring training to the school without taking days to train all teachers and leadership at the same time. The four teachers who mentioned Saber Digital stated, "Teachers went to learn and then become support for other teachers," and that there is a "Saber Digital Team" from which a select few teachers have received the training. They have "been the support for other teachers." There was also an interest in more teachers joining the team because there were only three total. Teacher 3 stated, "If teachers came to them for assistance, and they did not know the answer or how to explain or help, they would consult and collaborate with another team member from Saber Digital." The teachers who took training with Saber Digital could network and remain in contact with other members from other schools. Therefore, the ability to collaborate within the school and outside the school has proven to be beneficial. Moreover, Saber Digital has been valuable and strategic in terms of this school attempting to get all teachers and leadership educated with selected ICTs.

Theme 2: Leadership Delegates

Throughout the pandemic, teachers and leadership have been learning together, some more than others. Challenges have indeed occurred as a result of "outdated tools and resources" and lack of "training." Teachers believed that leadership support should be more than "providing links" or telling teachers to "learn how to use it." While some participants indicated their dislike for the absence of support, 4 affirmed that the support was well received. While reviewing the codes, the theme of leadership delegates arose as participants continuously stated how leadership assigns tasks and "sends links" as the leadership's version of support. When asked about leadership, specifically how leadership provides support to use ICTs, Teacher 8 stated:

I think that we still need to empower ourselves with many things, especially managers, because managers in the public part delegate too much, they delegate a lot, practically all the work is done by classroom teachers, the classroom teacher investigates, the classroom teacher applies, the classroom teacher . . . they think, let's say in their feelings, that we are free in our classroom as such because we are teachers and that they should not get involved, let's say, as in our pedagogical work, I say that they like to use that a lot as an excuse, to also avoid many things that they could support, as leaders of an institution, so in this case, I have realized that, for example, the only thing they said was "Professor, you have Teams, we send you some links, and you can find out, learn how it is used, how it's used, etc." But until then, that was the role, let's say, of them in using the tool and in the training that they give to teachers.

Teacher 8 stated, "Managers delegate a lot," and leadership used "that as an excuse to also avoid many things that they could support." This participant proceeded to state that leadership asks about the Teams platform and then stated, "We send you some links, and you can find out, learn how to use it, how it's used, etc." This statement is consistent with 12 teachers' verification about leadership support and two out of the four leadership interviews. In those statements, leaders stated that they "send links." Teacher 15 stated,

I believe that leadership is only focused on administration, on training, but leadership itself, in what has to do with the tool—as such—that is what is currently needed with the issue of the pandemic, it's not available. The instruments that we have at school were acquired years ago, that we brought even when we had a rented headquarters, but well, currently, there is a lot of equipment that no longer meets the conditions and characteristics to be used. An example of this can be found at the preschool level, some

tablets could not be updated because the operating system cannot be updated properly, it

is necessary to get more technological resources so that they can be put at the service of

the students. Training should be given by leadership, but instead, they delegate it to the

tech teacher or have us learn it ourselves. But how can we truly learn, acquire the skills

when tablets or operating systems are outdated?

It is not a secret that the pandemic showed the weaknesses of the educational system. The

limitations and flaws transcend beyond school walls. The "shortcomings" surpass teacher

support. The absence of leadership support contributes to the lack of ICTs utilized in classrooms

(Allen et al., 2015; Pinzón Capador & Guerrero Nieto, 2018; Zyad, 2016). As several teachers

mentioned, they "want more support" with "training" and "help with individual situations." As

previously stated, while participants specified leadership delegation, participants also mentioned

an affirmative support system with their experience. Some mentioned the "freedom to teach

lessons" how they like. Others stated "the autonomy to use applications of their choosing" except

the schoolwide platform, Teams.

Theme 3: Support

When teachers were asked about receiving leadership support when faced with

challenges regarding ICTs, many stated that "there was no support" or they "would like more

support" from leadership. Twenty-three teachers agreed that "leadership sent them links to

tutorials" and only "asked if they received emails" but did not necessarily inquire about how they

were doing or if "they needed help." In reference to leadership, Teacher 6 stated,

They play a fundamental role because the directors must promote the use of the new ICT-

related learning forms. However, beyond promoting interest, leadership should manage

resources that facilitate the teachers' performance of their tasks, which ultimately results

in the benefit of students. I have been able to decide how I teach my lessons and the

freedom of modifying assignments for those without access, but I feel like I had to learn

it on my own. With the help of my colleagues. I understand we all had to adapt at the

same time, but it has been more than one year now, and I would like more support and

training. Not just video tutorials.

It appeared that support came from "colleagues," and leadership showed their support by asking

if teachers could get training or a link to a meeting. Teacher 2 stated positively that the head

director "has worked on getting new equipment for the ICT lab and other classrooms. He bought

tablets and other elements that have helped us to perform our role as teachers."

Support ranged from different directions at the school. As a whole, teachers felt that there

should be more support and assistance from leadership. More personable training should be

given, and progress should be monitored. Leadership should not just give a link but also actually

assist teachers in ways that they have personally asked for. Another teacher stated, "I should

have received more support, especially about the children's internet access and following-up of

individual cases." Eleven teachers agreed that leadership gives them the autonomy to handle

individual situations, as there are many to adapt to; however, there was a mutual agreement that

leadership should be more involved than previously.

Four teachers mentioned a program where leadership could send teachers to learn how to

use certain applications and software, so the teachers are then able to train their colleagues.

Besides the technology teacher, only three other teachers were sent to receive training that they

were aware of. Saber Digital is a method of support but not ideal. With the exception of Teachers

1, 4, 12, and 13, teachers from the interviews stated they "taught themselves" and continue to

learn new things every day. However, it is a step toward receiving training, and these four

teachers stated it is "better than receiving no training at all." While teachers have discussed their experiences regarding leadership support, one out of the four interviewed leaders stated that the teachers "are the ones who have helped" with challenges regarding ICT implementation. Leader 1 stated the following on how he helped teachers with challenges regarding ICTs:

Yes, providing support in activities such as providing passwords to log in, searching for training, organizing schedules and managing platforms, updating parents about different activities, permanent communication with the teachers and students using WhatsApp and teams.

Leader 1's response exemplifies the teachers' statements about leadership support and other testimonials in relation to challenges and experiences concerning leadership and ICT implementation. Leadership at this school seems to believe that sending links and researching other training is enough or that it is how they provide support. Two out of the four leaders stated that when their teachers came to them about challenges, they "provided support" by "strengthening training processes." Leader 2 stated,

Of course, we all help each other with the challenges that have been presented to us since the beginning of this virtual learning that changed the teaching-learning processes. The support has been focused on facing the new challenges, from the knowledge of the new teaching tools, methodologies. Taking courses and training allow the teachers to exceed the limits and find multiple options to benefit the students.

When questioned about how they provide training to the teachers, Leader 3 provided this statement:

Through links, tutorials, and from other teachers who have experience using certain applications. We all have been learning together. The Saber Digital program is something

our school is working toward sending more teachers to, but it is difficult right now. We don't have the money, and we serve so many students from the low stratums that teachers use their own money and resources to provide for students who don't have access. We want to give more, but it is just difficult. It is why we try to communicate with parents and students at times to help.

Ultimately, the results showed that leaders provided what they believed was support by "sending links for teachers to watch tutorials" or asking teachers about their "access and knowledge" on the Teams platform. Also, two out of the four leaders stated that "teachers who have experience using certain applications" assist other teachers and leaders. The results conclude that teachers are not fully satisfied with the "support" they have been given. The school's policy, along with that of the Ministry of Education, shows that schools "have the autonomy to adopt information and communication technologies to their teaching methods of the form that they consider most pertinent." This means that teachers and the school "can choose to implement technology into lessons" if they choose to. While independence is appreciated, teachers "want more support." Unanimously stated, the Secretary of Education selected the "Teams platform" to be used, and tutorials were given to teachers on how to use the platform.

Subsequently, correspondence received from the Ministry of Education (L. G. Fierro Mayo, personal communication, June 24, 2021) stated the following in relation to decrees, laws, and regulations on the use of ICTs in preschool, elementary, and secondary education:

Currently, no standard fully regulates using information and communication technologies in early childhood, preschool, elementary and secondary education. However, Colombian regulations recognize that these technologies are fundamental in the educational process, as observed in Law 115 of 1994.

However, concerning preschool, elementary, and secondary education,

Colombian legislation does not allow the educational service to be fully provided

virtually. However, in the framework of the health emergency caused by the pandemic,

initially, guidelines were issued to carry out no contact school activities through

academic work at home [and] to protect the life and health of the educational community.

(L. G. Fierro Mayo, personal communication, June 24, 2021)

As previously stated in Chapter 2, the Ministry of Education worked on getting ICTs into

remote and rural areas through the Kiosko Vive Digital (Rojas-Rojas, 2018). The Ministry of

Education has four responsibilities: regulation, administration, planning and policies, and

monitoring. Moreover, the ministry prepares objectives and policies, controls delivery,

determines standards and procedures, monitors the structures, and offers practical assistance and

support, but it does not straightforwardly provide instruction (Radinger et al., 2018). In the recent

correspondence obtained from the Ministry of Education, they are not regulating any standards

or policies of the use of ICTs, even though they acknowledge the importance and fundamental

need. The communication also acknowledges the fact that "Colombian legislation does not allow

the educational service to be fully provided virtually" (L. G. Fierro Mayo, personal

communication, June 24, 2021).

In Colombia, the Ministry of Information and Communication Technologies typically

affords ICT resources to schools and the Ministry of Education (Radinger et al., 2018; Rojas-

Rojas, 2018). Three phases include schools receiving a computer for every 20 students, teacher

education on ICT implementation, and reorganizing maintenance and computers (Barrera-Osorio

et al., 2012). Also, the Ministry of Information and Communication Technologies implemented

the Live Digital (Vive Digital) strategy, which afforded ICT resources (Kioskos Vive Digital) in

rural areas and several other communities in Colombia (Radinger et al., 2018; Rojas-Rojas,

2018). However, results indicated that new regulations and policies had not been created even

with the recent pandemic that affected all students nationwide. The Ministry of Information and

Communication Technologies (2021) stated the following objective on its website regarding the

implementation of ICTs:

> To design, formulate, adopt, and promote ICT policies, plans, programs, and projects, by
>
> the Constitution and the law, to promote investment and close the digital divide,
>
> contributing to the economic, social, and political development of the nation and
>
> improving the well-being of Colombians. (para. 5)

The objective, along with the amended Article 13 of Law 1978 of 2019 and Decree 1064 of

2020, illustrates that the Ministry of Information and Communication Technologies has yet to

develop ICT policies and ensure their implementation in schools. Instead, Colombia has set a

goal to "become a digital society" by 2022 (Ministry of Information and Communication

Technologies, 2021, para. 3).

Transformational Leadership Context

According to Bass (1990), transformational leadership comprises four components:

idealized influence, individual consideration, intellectual stimulation, and inspirational

motivation. Questions 14–17 of the teacher interviews (see Appendix A) feature the

transformational leadership component. The interview questions for leadership personnel (see

Appendix D) include all of the transformational leadership components as well.

Idealized Influence

Questions 14 and 15 of the teacher interview questions addressed individualized

influence and individualized consideration. As defined in Chapter 2, individualized influence

implicates leaders who are charismatic, generate mindfulness, are role models, and exhibit

extraordinary ethical ideals (Bass & Avolio, 1994). A charismatic leader exhibits prominent

influence and influence on followers due to followers having respect, confidence, and trust in the

leaders (Yamamoto & Yamaguchi, 2019). Teachers were asked how leadership provided support

with challenges and how leadership could better support them. All 16 teachers from the

interviews stated that leadership "sent links" and "tutorials" for teachers to learn how to use

certain applications or platforms. Seven teachers from the focus group discussion stated the same

thing about the support provided by leadership. The seven teachers also stated they were sent the

"links" and "tutorials" to learn on their own about certain applications and platforms. All 16

teacher interviewees stated they "would like more support" and "more training, not just links."

Five teacher interviewees stated they would like "personable, professional development" and

"solutions to problems."

Questions 17 and 18 of the leadership interview questions encompass the idealized

influence component. A charismatic leader exhibits prominent influence and influence on

followers due to followers having respect, confidence, and trust in the leaders (Yamamoto &

Yamaguchi, 2019). Question 17 asked leaders if they think their leadership style influences

teachers, while Question 18 asked leaders how their teachers show that they respect and trust

them. See Tables 4 and 5 for responses.

Table 4

Responses to Question 17 for Leadership

Leader	Response
1	"I believe my leadership style influences my teacher by setting examples, providing cooperative work, with the adoption of the institutional philosophy, with constant motivation and recognition of the teachers' work and their additional efforts that they deliver day by day."
2	"Totally agree." When asked to follow up and give a more detailed response, this leader did not respond.
3	"No." The follow-up response was, "I do not feel that my leadership style influences my teachers. I follow the policies and rules that we have in place and do my best to make personal accommodations when I can. But our school has so many students per class, and we do not have the funding to provide everything we need or what the teachers want. I do not give explanations to teachers except that I do what I can. I do not think my style influences teachers, as the teachers are very self-efficient and learn most of everything on their own or from other teachers. We started this pandemic together, and we are all still learning together. Many did not like that we pushed the Secretary of Education platform without giving a choice, but there was no choice. Now that more time has passed and we are trying to be better, I think I can possibly give options and try to provide more support of what the teachers would like."
4	"Here is where leadership is important, it has to be the model to follow, should be organized and ready to provide support for those who are confused in certain stages or when some proposals make no sense for them. That's the reason why it is important to maintain a permanent pedagogical dialogue."

Table 5

Responses to Question 18 for Leadership

Leader	Response
1	"Providing assertive communication, respect, feedback, counsel at work, and personal situations we have to deal with every day."
2	"Promoting respect and trust, that way, assessing execution and dynamics, not only in classes but the implementation of highly innovative pedagogical proposals, therefore, it needs collaborative work of the teaching team."
3	"Due to their commitment and dedication to face new challenges, the teachers join the proposals and contribute to improving them. They are respectful, and I believe they respect our school and me as they always try to push for the best and to ask us to assist in many things. I am honest with my teachers when it comes to certain things that I cannot help with or [am] not capable of helping with. But I try to find someone else who could help or direct them to the right person; that is why I believe they respect me."
4	"Yes, my teachers are very respectful. They communicate politely; if there is a problem, they send me an email and communicate it to me. We may not always agree on certain things, but the teachers respect me. I believe they trust me as well, as they come to me with student cases at times. And when there have been issues, I try to give them solutions in the best way that I can."

Responses from leaders indicated that two out of the four leaders did not believe that their style of leadership influences teachers. One teacher did not give a follow-up explanation of why they felt that way. However, the other leader did give a follow-up response and did not clearly explain why their leadership style did not influence their teachers. According to Bass and Avolio (1994), transformational leaders are role models, generate mindfulness, and exhibit ethical ideals. A transformational leader exhibits influence due to followers' respect, confidence, and trust in leaders (Yamamoto & Yamaguchi, 2019). While two leaders stated they influenced their teachers and their teachers respect them, the responses from teachers demonstrate a mixed response. Three teachers felt that leaders provided influence, while the remaining 26 teachers

gave hybrid answers of "yes," leaders provide "support," but "more support is needed." Teachers were not asked about respect toward leadership, as it was not a pertinent question for the study. However, leaders were asked if teachers respected them, as it is a transformational leadership trait under idealized influence. My findings indicated, according to leadership, the teachers respected leadership and showed respect in many different forms.

Individualized Consideration

Individualized consideration involves transformational leaders enabling the link between personal needs and organizational goals (Hallinger, 2003). Linking personal needs and organizational goals, the motivation of followers shifts from short-term to long-term (Yamamoto & Yamaguchi, 2019). Transformational leadership encourages new opportunities and ways of doing things while offering support, motivation, and fostering open communication with followers (Cherry, 2020). According to one teacher, "Leadership supports personal development," while another stated, "Leadership is understood as the self-interest to research and train me. Leadership supports my work activities since it enables me to acquire more and better skills for my work and improve communication." My findings showed that leadership at this school displayed "their version of support" to increase teachers' skills and ways to communicate.

Only three out of the 16 teachers from the interviews stated that leadership supported "personal development," "self-interest," and "work activities" that provide "better skills for "work and improving communication." There was a disconnect with the remaining 26 teachers. From the 13 teachers in the focus group, none stated any constructive or affirmative responses of support from leadership besides the "sending emails with links" or "tutorials," the hope of "being part of the Saber Digital team," and having the "freedom to teach the lessons" and "use certain applications" of their choosing. For the remaining 13 teachers from the interviews, none of the

responses indicated transformational leadership traits with the exception of "provided support by sending links" and "tutorials."

Questions 1–11 of the leadership interview encompassed individualized consideration. When questioned about the inclusion of ICTs in the vision and mission statement, three leaders stated, "Yes," but only one leader went into more detail with the following response: "Of course, they are a fundamental target of institutional current affairs. ICT has become the cross-cutting axis of all knowledge fields, planning, organization, and execution components in school." Leaders were then asked about what support is provided to teachers as they engage students with ICTs. All four leaders stated that "links to training" and "links with tutorials" are sent to teachers. Additionally, two out of the four leaders stated that teachers are informed to seek assistance from "colleagues" and "other teachers who are more knowledgeable with technology."

When asked about challenges and problems, all four leaders collectively mentioned "lack of internet access," while Leader 4 gave more detail and stated, "The most important thing is to overcome equipment and network access difficulty, going through poverty barriers to keep children connected. The lack of internet access across our student population is very challenging, but we make do." When asked about training, professional development for leadership, and teachers, all four leaders stated that they received "basic training" on the Teams platform, with two leaders stating that the training was "directed from the Secretary of Education." Moreover, Leaders 1 and 3 mentioned the Saber Digital teams, where selected teachers can be trained on ICTs and become the experts that train other teachers.

The findings indicated that the leaders found it "challenging" and "not easy" when asked questions about their experiences of ICTs and the pandemic. However, collectively, the leaders generally stated that the experiences were good. Leader 4 stated,

The experience was good, since March 16, 2020, the teachers continued working with

students and monitors through WhatsApp, sending guides, then, we learned how to use

the Edmodo platform and Zoom. Finally, in the midyear, we institutionalized the Teams

platform for everything related to the classes.

Overall, experiences were perplexing, but throughout the pandemic, the experiences enhanced

skills and strengthened the relationship between teachers and the leaders as they "learned

together."

Furthermore, when leaders were asked about how they helped teachers grow through

personal and professional challenges, all four stated, "with training" and "support,"

transformational leaders promote personal and professional development (Cherry, 2020;

Yamamoto & Yamaguchi, 2019). These leaders promoted professional development by

providing training and sending teachers to the Saber Digital training to learn more about ICTs.

Transformational leaders listen to followers' concerns (Cherry, 2020; Yamamoto & Yamaguchi,

2019). The leadership was concerned with teachers' "self-interests" and "supported work

activities," and improvement of "communication."

Intellectual Stimulation

Yamamoto and Yamaguchi (2019) stated that "transformational leaders stimulate

followers intellectually" (p. 49). Transformational leaders do this by assisting followers with

seeing through a new lens when faced with challenges—for example, encouraging followers to

inquire about expectations and create additional innovative solutions to problems.

Transformational leaders inspire improvement by intellectually stimulating followers to think

outside of the box. The leaders were asked two questions that featured the intellectual

stimulation component. Question 12 asked how leadership modeled and promoted ICT usage for

teachers. Question 13 asked if leaders saw teachers using their creative abilities to solve

problems they may have encountered. See Table 6 and Table 7 for responses.

Table 6

Responses to Question 12 for Leadership

Leader	Response
1	"With the planning and guiding of daily activities, everything is focused on the management tools and technological equipment, according to the actual requirements of our society."
2	"By integrating the ICTs to pedagogical practices in several ways." (A follow-up question was sent but went unanswered.)
3	"As I mentioned before, by supporting them with their wishes in terms of updating equipment, planning and guiding daily activities with applications and certain technological tools, and taking the same training they have to take."
4	"The school is organized with two fundamental platforms, TEAMS, from which all classes and meetings are held, as well as parents' attention, and WhatsApp groups, where group directors we monitor and help guide daily school activities if necessary. We use teams like the teachers and show them that any problem can be solved or worked out. It's how I think we promote ICT usage, at least the Teams platform and any applications the teachers use in daily lessons. We try to be a part of it."

Table 7

Responses to Question 13 for Leadership

Leader	Response
1	"Totally, there is an excellent team who every day implement actions to deliver a high standard solution to the multiple activities. I ask teachers to talk with this team and try and find a solution before asking me; we, too, rely on other teachers to help with technology problems."
2	"Yes, I have seen some teachers being creative in the virtual classes and applications, giving them dynamic activities in-depth. I try to allow flexibility when it comes to what teachers do as not all students have access, and it can be challenging."
3	"Whether personally or professionally, it is important to know teachers' concerns, ideas, suggestions, questions, or difficulties in order to analyze their viability. It is good to know when teachers can figure out how to use applications or new platforms as we normally send out links and are working toward having more teachers be a part of the Saber Digital."
4	"Each problem is solved [by] asking for the most experienced ones, doing tutorials that work for both teachers and students."

As shown in Table 6, Question 12 asked leaders how leadership modeled and promoted ICT usage for teachers. Each leader's response was different, except from Leaders 1, 3, and 4, who answered "guiding daily activities." Leader 4 indirectly stated that they as leaders model by using teams to show teachers "any problem can be solved or worked out." Then he subtly stated how he promoted ICT usage with "planning and guiding daily activities," focusing on "management tools and technological equipment," implying that weaving an emphasis on the tools and equipment into daily activities and planning demonstrates the promotion of ICT usage. Leader 2 was vague in her response, and a follow-up for this question went unanswered.

Leader 3 did not directly state how she modeled the use of ICTs but stated she took "the same training" as the teacher took, which implies that was her modeling ICT usage. In regard to promoting ICT usage, Leader 3 referred to "planning and guiding daily activities with certain

applications and technological tools." Leader 4 also mentioned "guiding daily activities";

however, she stated, "We use teams like the teachers, and show them that any problem can be

solved or worked out." Leader 4 continued, "It's how I think we promote ICT usage, at least the

Teams platform, and any applications the teachers use in daily lessons. We try to be a part of it."

Leader 4 directly implied that she promoted ICT usage by using the same platform as the

teachers and by "trying to be a part of" the process and practice.

Table 7 shows the responses to Question 13, which asked if leaders saw teachers using

creative ability to solve problems they encountered. Similarly, Leaders 1 and 4 stated that there

is an "excellent team" that teachers can utilize for help and that "the most experienced ones" help

solve problems. Leader 2 stated that she had seen teachers being creative when it came to solving

problems; however, she did not specifically say how. Leader 3 did not answer the question

straightforwardly; instead, she stated, "It is good to know when teachers can figure out how to

use applications or new platforms." No example or statement showed critical thinking. Rather,

the solution was to have others be the problem solvers by "having more teachers be a part of

Saber Digital." Being a part of Saber Digital will be very helpful as all of the teachers in the

entire school will get the hands-on training they have expressed a desire for. However, giving

teachers the opportunity to resolve problems, whether with certain ICT applications or

incorporating ICTs in daily activities for all students, will inspire improvement by intellectually

stimulating teachers to think outside of the box. Leaders 1 and 4 did not directly illustrate

intellectual stimulation or teachers looking for innovative ways to solve problems but rather

showed that teachers inquire about expectations. My findings indicated that the expectation was

to go to a team member or "the most experienced ones" when a technological problem arose.

Inspirational Motivation

As explained in Chapter 2, transformational leaders empower change, motivate, and stimulate individuals. It is comprehensible that transformational leadership can produce sustainable changes in teaching practices and the implementation of ICTs in daily instruction (Yamamoto & Yamaguchi, 2019). Subsequently, transformational leaders inspire and motivate followers by formulating goals. Teachers were asked in both the interviews and focus group discussion if leadership provided any incentives such as bonuses or more pay. All teachers stated "no." In the leadership interview questions, Questions 14–16 included the inspirational motivation component. Question 14 asked leaders if they encountered challenges motivating teachers, and if so, how? Leaders 2 and 4 stated, "No." Leaders 1 and 3 elaborated. Leader 1 stated, "Teachers are always flexible, and teachers are in constant searching of enhancing knowledge for the wellness of educational quality." Leader 3 stated, "No, there were no challenges in motivating teachers, but we provide respect, promote autonomy, teamwork, and cooperative learning."

Question 15 asked leaders in what ways they developed awareness of the vision and mission of the school. Leaders 1 and 3 stated, "Strengthening actions focused on the institutional horizon." The institutional horizon is the school's handbook. Leader 2 stated, "Creating spaces for reflection and feedback based on the diverse experiences that make us up." While reflection and feedback were actions in how Leader 2 developed awareness of the vision and mission of the school, the response did not answer the question explicitly. Moreover, Leader 4 stated how she developed awareness of the vision and mission of the school when she stated, "During most relevant meetings, contingencies committee, academic council, parent's meetings, and others, the

mission and the vision are mixed." Again, Leader 4 did not clearly state in what way awareness developed in the meetings or councils.

Question 16 asked how leaders thought their personality modeled or motivated teachers in adapting or going beyond the school's goals. Leader 1 stated that his "adoption of the institutional philosophy with constant motivation and recognition of teachers' work and additional efforts" motivated teachers to adapt and go beyond the school's goal. Leader 2 did not understand the question and did not provide a follow-up response. Leader 3 stated that "being recognized in management" and "overcoming difficulties" motivated teachers to adapt and surpass school goals. Regarding the leader's personality or position and if it motivated teachers, Leader 4 stated,

> Leadership has to be the model to follow, should be organized and ready to provide support for those who are confused in certain stages or when some proposals make no sense for them. That's the reason why it is important to maintain a permanent pedagogical dialogue. I believe I motivate teachers to be open communicators and to ask for assistance or to tell me if something does not seem right or suggest changes. We should be working as a team.

My findings indicated that three out of the four leaders believed they motivated teachers and in different capacities. Leaders 1 and 3 mentioned "recognition" as a motivation factor for teachers to adapt and excel.

In closing this section, transformational leaders form the settings that empower teachers to be dedicated and motivated to work toward change (Yamamoto & Yamaguchi, 2019). Transformational leaders inspire teachers to transform and reflect on previous and current practices, which is an essential factor for effective ICT implementation (W. Chen, 2013;

Yamamoto & Yamaguchi, 2019). The leaders have stated that teachers are dedicated, motivated by continuously learning, and motivated by being "recognized by management." Leaders have also stated that they "openly communicate" with teachers and are "flexible." Teachers feel the significance and purpose of tasks through shared objectives due to the exceptional communication skills of transformational leaders (Yamamoto & Yamaguchi, 2019).

Nonetheless, my findings indicated that there could be some improvement on each component of transformational leadership to encourage, influence, intellectually stimulate, and motivate teachers to achieve goals personally and professionally. Transformational leaders foster ICT implementation at schools and focus on individuals' best qualities and skills (Hallinger, 2003; Yamamoto & Yamaguchi, 2019). While the leaders illustrated that they fostered ICT implementation, there was no focus on teachers' best qualities and skills. The exception of the focus was training and "basic training" on tools and applications. The only real mention of an emphasis on enhancing skills was sending more teachers to the Saber Digital training. The plan is as follows:

> By 2022, Colombia will be a digital society that stands out in Latin America and the world, where all citizens, urban and rural, are connected with quality, security, and sustainability; they adopt ICTs and benefit from digital services to improve their well-being and increase the country's productivity, innovation, and competitiveness. (Ministry of Information and Communication Technologies, 2021, para. 3)

There are no policies or designed plans available to display at this current time for public knowledge.

Research Question 4

When the pandemic hit, many teachers and students were "forced" to learn and use ICTs. While some teachers and students across Colombia had access and experience using ICTs, this was not the case for all, especially at this urban school. Some teachers stated they already had some experience, while others stated they did not have any or just a little experience and knowledge. Research Question 4 revealed how teachers' attitudes changed regarding technology use with the required practice of ICTs during the COVID-19 pandemic. Through the coding process, three themes arose: digital literacy thanks to the pandemic, a lot of students and a lot of situations, and positive attitudes.

Theme 1: There Is Digital Literacy Thanks to the Pandemic

The coronavirus (COVID-19) pandemic devastated the world. As mentioned in Chapter 2, people were affected physically, emotionally, mentally, and educationally. This forced schools to switch to e-learning and forced teachers to use ICTs. According to the United Nations (2020a) and Bushweller (2020), the communities most affected were those with low levels of digital literacy (students, teachers, and parents), areas with poor infrastructure, and individuals who fell into the low socioeconomic category. This urban school fell into that category. Teacher 13 stated the following about using ICTs before and now with the COVID-19 pandemic:

> Before the pandemic, I was already using some ICT platform or ICT tools; however, due to the pandemic, I had to improve, study, and train on other platforms to be able to offer high-quality e-learning that meets the students' and families' expectations. The digital literacy is better, but there is more to learn. As the ICT advances by leaps and bounds, I should update my knowledge frequently instead of learning abruptly about them due to unexpected situations.

Continuously learning has enabled teachers to "update" their skills and knowledge with technology. The constant changes and adjustments empowered teachers to get outside of their comfort zone. Teacher 1, who had been teaching for 27 years, stated, "At that moment, schools did not have as many technological tools as they do now. I think getting familiar with the ICT makes easier the duties of hundreds of people, including teachers." While a few participants stated that they have colleagues who still resist change, the circumstance of the pandemic has assisted with "diminishing the existing gap" and improving "digital literacy" among parents, teachers, and students. Teachers "have become more open-minded" to learning about ICTs, considering that ICTs are the communication bridge between schools and families. Teacher 11 detailed this further and stated,

> We said a little that . . . or we thought that the new generations were already like digital citizens. In general terms, we were gossiping, it was the use of technology to gossip, to watch videos, not a real form, or rather to explore everything that technology can generate us, which is to search, learn, know, read, experience new things, and I think we misused the tools. The cell phone has so many tools, and well, people do not really . . . I, for example, used it only to talk, to call, for texting, and no more, while now people use it for everything. It serves as a camera, it serves as a library, it serves to download different applications, it has other uses. My feeling is also a sensation of satisfaction due to the implementation of technological resources hav[ing] been improved, sometimes even I might think that they are even exhausting at certain times, so I believe there is digital literacy, thanks to the pandemic, it was generated faster, and we are more aware of the possibilities that can be generated for better and greater things beyond social networks or the propaganda.

Due to the pandemic, there was an acquired concern economically and academically. In-person classes started at some schools; however, at this urban public school, there were too many students to one teacher. Each classroom had approximately 40–50 students. Although those adversities were present, teachers continued to learn and "improve digital literacy." Twenty teachers mentioned the "limited access to the internet"; however, even with the lack of access, "students can recognize the ICTs [and] can use them properly." Motivation to continue to work on the gap pushes teachers to "update knowledge" on new tools and apps. Teacher 16 stated,

> Let's say that we should not go back when we can resume the in-person lessons. Let's say that, at the level of presence, I believe that the use of these tools and these resources was an improvement, and it should continue to be explored and exploited to increase our educational systems at all levels and in all grades because we have already realized that circumstances can change rapidly. We do not know how long we are going to continue; for example, right now, working at home because everything is uncertain, there are too many variables that influence this. But we also do not know what else could happen in the future, so I think that all the apps and tools that we have learned to use, either by choice, or by necessity, or experience, are something that will be useful at any time for our planning, for our work to diversify strategies with students and with parents too. There is more digital literacy due to the pandemic. I think that nothing that one learns falls on deaf ears but that afterward, it is modified simply and adapted to new circumstances. I think that this new learning experience has enhanced our life, personally and at an educational level.

Nonetheless, through the trials and tribulations of utilizing, updating, and training on ICTs, "digital literacy has improved." The push to acquire skills and utilize ICTs daily was due

to the pandemic. There has not been an easy process to incorporate ICTs; however, through the dedication of teachers and support by leadership, ICT implementation has improved and "enriched" the lives of teachers and students. Specifically, at this urban school, teachers stated that they have "students who comment on the activities or apps" positively. But with all positive aspects of ICTs for teachers, there were negative ones presented too. The challenges like "limited internet access," "access to technology at home," and "a lot of students and a lot of situations."

Theme 2: A Lot of Students and A Lot of Situations

As revealed previously, each teacher had approximately 40–50 students per class. While some students were able to access and download required applications, most of them could not. This resulted in teachers "printing off materials and taking it to students' homes" or "searching for applications that did not require that much data usage." All of the different situations had been "exhausting" for some teachers. Teacher 3 shared her experience as follows:

> For example, in my case, I have never been able to set a synchronous meeting with all my students because many of them do not have access to the internet or the apps. So, I have to work with those students via WhatsApp. To the other group, I must call them to check if we suddenly meet on Teams or via Meet. So, I think our work has been multiplied a lot. It is like if we have 50 students, we also have 50 different situations, which we must attend to in an individual and personalized way.

Teachers 1–16 stated that most students did not have access to the internet or apps. Teachers had to "diversify strategies" to connect and teach all of their students. There are "a lot of students and a lot of situations" presented at this urban school. Teachers illustrated that the constant adaption and implementation of ICTs was "exhausting" but also "enriching." Teacher 8 stated the following about her experience:

I have enjoyed learning the new tools. It was frustrating at first because like the school

had us use Zoom, and then we switched to Teams, but now I have to use Meet with some

students and parents because they cannot access Teams or they always have issues. That

has been the most challenging for me is switching back and forth and trying to

accommodate everyone. In my classroom, I have 43 students. Some are able to log on

every day while others cannot at all or very seldom. I feel that my workload has

increased, especially for the students who have no access, because I want to make sure

they are learning the same material, but in a fun way. With every student, there can be

another situation, but I like that students can send me WhatsApp messages to let me

know if they are having connectivity problems or something else has occurred. I just feel

that it can be hard to tell when students actually have a problem or if they use it as an

excuse not to be present.

Every situation or hindrance that arises with ICTs only increases the likelihood of the

limitation or challenge to be resolved for future purposes. The difficulty with students having

internet access or access to technology shows the flexibility that all teachers and schools should

have. The flexibility shows that students from low socioeconomic strata are given a chance to

learn no matter their status. The willingness to adapt demonstrates the ability to modify to fit the

individual needs of students and teachers. There will always be a next time; however, as stated

earlier, teachers have to "continue to modify" strategies and attitudes toward ICTs. With "ICTs

advancing," teachers and schools will continue to acclimate.

Theme 3: Positive Attitudes

According to Adegbenro et al. (2017), research indicated that accomplishing significant

usage of ICT tools in instruction could be swayed by teachers' attitudes regarding technology.

Additionally, Albugami and Ahmed (2015) stated that if teachers familiarize themselves with ICT tools, then they could gain competence and more positive attitudes about the usage. Unanimously, all teachers and leaders stated that their attitudes toward ICTs have "changed" and in a "positive way." Teacher 7 stated,

> Yes, they have changed. Before the pandemic, I used them sporadically, and now they have become a key work tool. The teachers' attitude has changed for the best; we have had to get into the technology world not just for [the] teaching process but to attend work meetings with the leadership board and colleagues inside and outside the institution as well.

> Not only have the teachers and the leadership from this study stated that their attitudes toward ICTs changed but that technology is "constantly advancing" and that they "must adapt to it." The teachers from many years of experience to the teachers with less experience all stated their attitudes changed positively, with a select few stating their prior "reluctance" and "fear." Leader 4 stated, "Helping the staff to lose their fear of change. Fear, for me, is what stops us the most. Most of my staff have lost their fear. Their attitudes have become more open-minded and positive to change and adapting." The technology teacher, Teacher 9, provided his commentary to attitudes changing toward ICTs as follows:

> It has been a positive attitude. Regardless of being a technology and computer teacher, every day I can learn about new helpful applications to use and incorporate into the syllabus. I think educational institutions must emphasize ICT coaching. I think that technology is constantly advancing and likewise we must adapt to it. Having a more open attitude to train and incorporate the different ICTs in our daily work.

All teachers stated that their attitudes "changed," especially "before the pandemic" to now. Surprisingly, Teacher 15 mentioned the school did not always have resources or "internet connection" and that they "covered their own ICT needs." Moreover, "having a more open attitude" has made the teacher feel "more confident regarding the activities and the tools" they want to use in their classes. As previously mentioned in Chapter 1, teachers who have a more optimistic mindset about ICTs are more likely to use them more often in their teaching (Adegbenro et al., 2017; Andoh-Baidoo et al., 2014). Results from the data have demonstrated the positive attitudes toward ICTs and the increased usage of ICTs, partly due to the pandemic but also from the continuous "advancing" technology and tools. On a final note, Teacher 4 presented this response to teachers' attitudes changing regarding technology use with a required practice of ICTs during the COVID-19 pandemic:

> Teachers' attitudes had changed remarkably because before the pandemic, many teachers did not know how to incorporate technology into their daily work. Before, I was afraid and reluctant to use it. Now, I am more willing to learn about its usage. The pandemic forced us to look for the tools to be able to cope with this abrupt change. I have learned to explore and adapt support material, to use tools that allow me to have synchronous meetings with students, and to explain to children the contents through ICT. It has shown me that it is necessary to know and implement ICT in the educational field correctly. I think the technology is constantly advancing and likewise, we must adapt to it. My experience has been gratifying. Thanks to ICT training I have learned new useful things to make the learning process easy.

Chapter Summary

The data collected illustrated that teachers' attitudes toward ICTs had changed significantly. The data also demonstrated that teachers were dedicated to providing resources to students any way they could, especially students who did not have internet access. While leadership provided tools and resources to the best of their ability, which they view as support, most teachers felt they needed additional support. Contrary to leaderships' statements, sending links to tutorials is not enough support, according to teachers. Additionally, the Ministry of Education, the Secretary of Education, and the Ministry of Information and Communication Technologies were not enforcing ICT policies. It is in the law and mission of these organizational entities to develop and monitor ICTs nationwide by 2022. Furthermore, this chapter presented the data collected. Chapter 5 will display the discussion of findings, connection to the theoretical framework, transformational leadership context, limitations, and recommendations.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative case study was to establish if transformational leadership influenced teachers' attitudes and usage of ICTs in an urban school in Colombia. Little is known about transformational leadership and its effects on teachers' attitudes and usage of ICTs. Three themes emerged under each research question. Under Research Question 1, primary teachers described challenges they encountered when attempting to assimilate ICT into their lessons. The emergent themes discovered in Research Question 1 were internet access, fear and forced use of ICTs, and training themselves to use ICTs. In Research Question 2, primary teachers described their experiences regarding ICT integration. The themes that emerged were enriching experiences, complex and complicated, and the Teams platform and WhatsApp.

Not only did Research Question 3 disclose the roles of leadership and how it contributed to supporting and obtaining resources, but it also disclosed the transformational leadership traits that leaders exhibited and traits that could be improved. For Research Question 4, teachers and leaders responded to questions that revealed what role transformational leadership played in the availability of resources and support of classroom technology implementation. The three themes that emerged were the ability to collaborate, leadership delegates, and support. Moreover, the data from Research Question 4 revealed how teachers' attitudes changed regarding technology use with the required practice of ICTs during the COVID-19 pandemic. The data analysis for Research Question 4 revealed the following themes: there is digital literacy thanks to the pandemic, positive attitudes, and a lot of students and a lot of situations. My findings indicated that teachers' attitudes toward ICTs have changed. Furthermore, my findings revealed that the leaders at this urban school exhibit transformational leadership traits; however, some of the traits

are neither distinctive nor illuminated adequately in responses nor actions described by participants.

Discussion of Findings in Relation to Past Literature

The research questions organize this section. The discussion of the first research question is described in this segment, while the other three research questions are discussed in subsequent subsections.

Findings for Research Question 1

The data analysis for Research Question 1 revealed the challenges primary teachers faced when they attempted to utilize ICTs in their lessons. The internet was stated as the biggest challenge for teachers due to the lack of access and for the inability to reach all of their students. Also, many teachers feared not being able to comprehend the new applications that were to be utilized and were afraid of failing and letting down their students. The majority of teachers felt forced to use ICTs and felt it essential to use certain applications. The obligation to utilize ICTs led to almost all teachers training themselves on new and required ICTs.

Responses from participants communicated the challenges and fears and described the actions taken to overcome the adversities when they attempted to assimilate ICT into their lessons. Teachers' responses confirmed Knowles's (1973) andragogy theory on how adult learners acquire knowledge through experiences. The teachers faced challenges incorporating ICT into daily lessons. The lack of internet access required teachers to adapt and modify assignments for students without access. Due to the urgency of teaching virtually during the pandemic, the fear teachers felt toward ICTs was removed. Moreover, the experience of not receiving hands-on and directed training on the newly required tools forced teachers to train themselves to be able to teach and communicate with students and parents.

Findings for Research Question 2

Primary teachers described their experiences with ICT integration. The experiences were portrayed as both positive and negative. Some teachers described their experiences as "enriching," while others labeled their experiences as "complex and complicated." Additionally, two applications were frequently stated: the Teams platform and WhatsApp. My findings were consistent with D. Kolb's (1984) experiential learning theory. Adults need to have experiences to retain the information (J. Chen, 2014; Knowles, 1973; D. Kolb, 1984; Merriam & Bierema, 2014). Additionally, prior experiences frame what adults would like to learn in the future and relate to what they currently are learning. Teachers described the desire to have more training and professional development. They want the training to be able to teach the students using different tools and make sure they "do not let them down." Teachers are currently using the Teams platform. Teachers have described the benefits, likes and dislikes, and what teachers would like to do in the future. Naturally, the desire to acquire new skills or learn further information occurs when adult learners want to advance in their field or become updated on new curriculums, technologies, or platforms. The teachers became up to date on a new curriculum for virtual learning; new technologies to include a new computer, iPad, or some type of tablet; and different platforms, Teams being the current platform.

Previous research stated that teachers in Colombia had had significant constraints contributing to the lack of technology integration in classrooms (Pinzón Capador & Guerrero Nieto, 2018). The constrictions included connectivity, technological skills, infrastructure, institutional support, feasibility, user-friendly interface, time, and students' likes and dislikes (Pinzón Capador & Guerrero Nieto, 2018). My findings indicated that connectivity, technological skills, and institutional support were still a constraint. As indicated in the findings

section of Research Question 1, the biggest challenge that teachers described was the internet.

Digital literacy or technological skills will be discussed under the subsection of Research

Question 4. Institutional support will be discussed under the subsection for Research Question 3.

In Chapter 2, the literature specified that in Colombia, the Ministry of Information and

Communication Technologies typically afforded ICT resources to schools and the Ministry of

Education (Radinger et al., 2018; Rojas-Rojas, 2018). However, as stated in Chapter 4, my

findings revealed that schools possess autonomy if they want to implement technology into their

lessons. Correspondence received from the Ministry of Education stated that there were no

standards for regulating ICTs, nor does Colombian legislation allow for education to be provided

entirely virtually (J. G. Fierro Mayo, personal communication, June 24, 2021).

Furthermore, research showed that the Ministry of Education prepared objectives,

policies, controlled delivery, determined standards and procedures, and offered practical

assistance and support but did not straightforwardly provide instruction (Radinger et al., 2018).

My findings were not consistent with this statement as the Ministry of Education provided

communication stating the contrary. However, teachers did mention the Secretary of Education

provided the basic Teams training, as the Teams platform was chosen by the Ministry of

Education to be used in schools. Additionally, my findings from the document analysis

illustrated that the Ministry of Information and Communication Technologies had yet to develop

ICT policies and ensure its implementation in schools. It has been a goal or plan with no clear

policy or plans made available for public knowledge.

Findings for Research Question 3

Transformational leadership encourages new opportunities and ways of doing things

while offering support and motivation and fostering open communication with followers

(Cherry, 2020). Studies have shown that teachers need official support to develop the required skills to transform their classrooms utilizing ICTs (Pinzón Capador & Guerrero Nieto, 2018). The data analysis of Research Question 3 revealed the role transformational leadership played in the availability of resources and support of classroom technology implementation. This subsection will discuss the three themes that emerged from the data: the ability to collaborate, leadership delegates, and support. This section will also discuss my findings based on Bass's (1990) four components that shape a transformational leader.

Transformational leaders form the settings, which empower teachers to be dedicated and motivated to work toward change (Yamamoto & Yamaguchi, 2019). My findings indicated that teachers were very dedicated to working toward change as teachers modified lessons and "strategized" every possible resource they could to "reach students." Teachers worked with other teachers to acquire the skills needed for new applications and required platforms. Leaders also worked with teachers to acquire the skills or obtain assistance, as there were teachers with more experience and knowledge. Additionally, W. Chen (2013) and Yamamoto and Yamaguchi (2019) stated that transformational leaders inspire teachers to transform and reflect on previous and current practices, which is essential for effective ICT implementation. The teachers and the leadership within this urban school networked and built an academic community to which teachers and leadership could connect and communicate when assistance was needed with virtual learning. Leadership has placed three teachers in the Saber Digital program thus far to acquire training for virtual platforms for educational use. Managers and the three teachers sent to train were able to reflect on past and current educational practices that were essential for ICT implementation. Although three teachers is a great start, three teachers out of the 38 primary teachers are not enough. The number of teachers sent to Saber Digital does not reflect secondary

teachers who were sent to train. Nonetheless, the opportunity to collaborate within and outside of the school has been advantageous, as teachers are able to help other fellow teachers in utilizing ICTs effectively.

"Leadership delegates" was the second theme that emerged from the data collected under Research Question 3. Teachers provided responses that directly stated that "managers delegate." Teachers believed that leadership fails to provide training or instruction on the required tool, with the expectation that ill-equipped teachers will have the know-how to do so. One teacher also mentioned that leadership delegates the training to the technology teacher or has teachers learn on their own. The limitations or shortcomings of leadership exceeded teacher support. According to Allen et al. (2015), Pinzón Capador and Guerrero Nieto (2018), and Zyad (2016), the absence of leadership support contributes to the lack of ICTs being utilized in classrooms. While my findings did reveal a lack of support in the opinions and experiences of the teachers, there was no indication of a lack of ICTs being utilized in the classrooms. Teachers remained dedicated to their students and their positions to learn what they needed to teach virtually and to teach in any capacity necessary for all students with or without internet or ICT access. Additionally, while teachers revealed the delegation from leadership, teachers also agreed that the autonomy to teach lessons how they like was a great experience. With the exception of the Teams platform, teachers were able to use different strategies and methods to teach the same content to the less fortunate students. The flexibility was valued and respected; however, teachers voiced that they would like "more support" not only in training but also with "individual student cases."

Additionally, teachers felt that leadership should give more support. While autonomy is appreciated, personal involvement from leadership is desired. My findings indicated that leadership provided support in the way that they knew how, by sending links, searching for

training, communicating with teachers, organizing schedules, and managing platforms. Not one leader stated that they personally assisted with training, but they confirmed that the teachers were the ones doing the training and supporting other teachers and assisting leadership with learning new and required tools. Schuh et al. (2013) discussed that transformational leaders inspire followers to collaborate with managers to reach organizational goals. Leadership at this school encouraged teachers to collaborate with the academic network in and outside of the school to include the Saber Digital team. The collaboration aided in obtaining the school's goal of virtual learning as teachers learned how to use Teams along with other tools to educate and better implement ICTs in daily lessons.

Findings for Research Question 4

The data analysis for Research Question 4 revealed that teachers' attitudes changed regarding technology use with a required practice of ICTs during the COVID-19 pandemic. The three themes presented from the data included digital literacy thanks to the pandemic, a lot of students and a lot of situations, and positive attitudes. Previous research found a lack of digital literacy among teachers and support from their leadership. The lack of digital literacy and leadership support contributed to the absence of ICTs being utilized in classrooms (Allen et al., 2015; Pinzón Capador & Guerrero Nieto, 2018; Zyad, 2016). The study findings revealed that not all teachers lacked digital literacy. While some teachers did, the lack or presence of digital literacy coupled with a lack of or little support from leadership did not contribute to an absence of ICTs at this urban school. As previously mentioned in Chapter 1, a central issue focuses on being digitally literate among educators and students in ICT and other core competencies in Colombia (Rojas-Rojas, 2018). My findings revealed that teachers who formerly were not

digitally literate, adapted and became digitally literate in ICTs to teach virtually at a moment's notice.

According to the United Nations (2020a) and Bushweller (2020), the communities most affected by the pandemic were those with low levels of digital literacy (students, teachers, and parents), areas with poor infrastructure, and individuals who fell into the low socioeconomic category. The findings from the research revealed the students and parents in social strata 1 and 2 had low levels of digital literacy. My findings indicated that teachers at this school belonged to social strata 3 and 4; however, teachers overcame their fears and circumstances to acquire the knowledge of new applications and platforms to serve their students. The research from the 2018 TALIS quantified that 34% of teachers stated there was a significant need for ICT professional development for teaching. All teacher participant responses were parallel and stated that a need for ICT training for teaching was desired. There is a digital divide among students and teachers who reside in rural and urban areas in Colombia, where there is a disadvantage regarding access to ICTs (Pinzón Capador & Guerrero Nieto, 2018; Rojas-Rojas, 2018). However, the participants' responses showed that the required use of ICTs due to the pandemic had assisted with "diminishing the existing gap" and improved "digital literacy" among parents, teachers, and students.

The pandemic has improved digital literacy for those who have the resources. For those individuals who do not, specifically some of the student population at this urban school, accessing and completing virtual tasks have been difficult to nonexistent. Teachers printed materials, took packets to students with no access, and modified assignments to include using applications that did not require the use of data. With each student, there is a situation. A positive from each situation was the flexibility given to students from low socioeconomic strata. Teachers

adapted and modified lessons to fit individual needs. The forced use of ICTs exemplifies the ability to resolve any limitation or challenge that presents in the future.

Teachers' attitudes can be influenced by the significant use of ICT tools in instruction (Adegbenro et al., 2017). Familiarization with ICT tools can increase teachers' competence and acquire more positive attitudes toward the usage (Albugami & Ahmed, 2015). My findings illustrated that both teachers and leaders' attitudes changed toward ICTs. Before, teachers expressed their discontent with the usage and described the little to lack of implementation. However, during the pandemic, the forced usage gave teachers experiences that have forever changed their views and attitudes toward ICTs. Some teachers stated that they could not see their day without using some form of ICT. Teachers explained that they would continue to modify and adapt to diversify what and how they teach their students. The participants' descriptions of their changed attitudes were congruent with research on teachers who have a more optimistic mindset about ICTs and are more likely to use them often in their teaching (Adegbenro et al., 2017; Andoh-Baidoo et al., 2014). Nonetheless, my findings demonstrated the positive attitudes toward ICTs and increased usage due to the required practice of ICTs during the pandemic.

Connection to Theoretical Framework

Knowles (1973) stated that adult learners insist on knowing why they must learn something before obtaining that knowledge or acquiring the requested skill. This is prevalent in today's society because teachers and leaders must know why something new must be learned and for what purpose. For this study, participants stated that they "had to learn and adapt" to virtual learning to "reach students." Teachers and leaders understood why they had to learn about the ICTs used for lessons and for the purpose of reaching students due to the COVID-19 pandemic.

Additionally, adults learn only what they need to be promoted or to pass (Knowles, 1973). For this study, teachers acquired the skills to teach virtually.

My study findings demonstrated how teachers and leaders (adult learners) learned and overcame challenges while adapting, implementing, and acquiring new knowledge of ICTs. Knowles's (1973) andragogy theory outlines five assumptions about adult learners, which were used as a guide for the interview questions for both teachers and leadership (see Appendixes A and D). D. Kolb's (1984) experiential learning theory comprises the adult learning cycle, which guided the focus group discussion questions (see Appendix B).

Research Question 1: What Challenges Do Primary School Teachers Encounter When They Attempt to Assimilate ICT Into Their Lessons?

As adults mature, they change from being reliant on others to being self-reliant (Knowles, 1973). Additionally, when adults develop self-concept, they require being understood by others to accomplish self-direction (Knowles, 1973). For Research Question 1, teachers stated they "had to learn on their own" and "teach themselves" how to use required ICT tools. Learning to use tools without much guidance as expected was a challenge. Lack of internet access was also the biggest challenge for teachers. Teachers were self-reliant in those cases by figuring out how to "reach all students." Teachers also ensured the "quality of lessons" virtually and in paper packets for students with no access. When teachers asked for guidance, often, leadership asked that they ask their "colleagues with more experience" as "everyone was learning together."

According to J. Chen (2014), self-direction occurs when learning and experiences are optimized and applied in adults' learning processes. When it comes to expertise, adults learn mostly from their experiences, which can impact how adults learn in a classroom setting (Knowles, 1973). The second assumption from Knowles's (1973) andragogy theory, which

stated that adults gain experiences as they mature and develop. Experiences varied from "enriching" to "complicated." Many teachers described their experiences as "enriching" because of the value of using ICTs in lessons and using "diverse modalities" to teach. Some believed that ICTs made teaching a little easier and were tools that allowed teachers to communicate more outside of school with parents and students.

While some teachers expressed positive experiences, others were unenthusiastic. These "complex and complicated" experiences resulted in teachers expressing the apprehension of continuing to teach virtually only. This was partly due to "tech problems," "not knowing if concepts are truly understood by students," and the usage of ICTs "being more demanding and exhausting." Experiences were "complex and complicated" due to "students not having required software or access." These encounters "made it complicated to reach all students." Knowles (1973) indicated that adults' experiences impact how they learn, and adults learn from their experiences. Teachers stated that the only training received was through links or tutorials. From these communicated experiences, more training and support were needed. Experiences can affect how adults (teachers) acquire skills or expertise in ICTs. For teachers who have not had a great or "enriching" experience while learning and adapting to using ICTs for their lessons, there must be a way to provide guidance and support to enhance teachers' experiences.

Research Question 2: How Do Primary Teachers Perceive Their Experiences Regarding ICT Integration?

The andragogy process illustrates that adults accumulate an expanding tank of skills and experiences that enrich their learning as they mature (Knowles, 1973). D. Kolb (1984) stated that the transformation of experiences is created through knowledge. Conversely, D. Kolb (1984) indicated that knowledge derives from the transforming experience. D. Kolb's (1984)

experiential learning theory guided the focus group discussion (see Appendix B). The learning

cycle is broken into four learning methods and forms a practice of developing knowledge that

involves all four methods sequentially (A. Kolb & Kolb, 2012).

The first learning method of the experiential theory is concrete experience. The learner

must apply himself or herself fully, openly, and without bias in new experiences, which is a

concrete experience (D. Kolb, 1984). In this study, teachers were asked to describe an experience

where they were required to learn a new application to incorporate in their instruction. All of the

teachers described their experience of being required to learn a new application, Teams, at the

start of the pandemic. When asked as a follow-up of what emotion this experience implored, one

teacher said it was scary, while another stated that she was fearful as she was not sure if

everything was going to work out or not. One teacher described their experience of learning a

new application as a "generational thing" where he felt he had to learn the new application so he

"did not let his students down."

All of the adult learners applied themselves fully and openly as they learned how to use

the new application. They also learned by themselves from "looking at tutorials" and "through a

link" sent by their leadership. D. Kolb (1984) defined concrete experience as the learner applying

him or herself without bias in new experiences. While the teachers explained their fears, they did

not demonstrate any biases while learning how to use a required application in their daily

lessons.

The second learning method in the experiential learning theory is abstract

conceptualization. D. Kolb (1984) defined abstract conceptualization as the learner must create

concepts that integrate their observations into logically sound theories. Teachers in the focus

group discussion were then asked about their knowledge and opinions on using the new

application in their instruction. Only 5 out of the 13 teachers stated they had no prior knowledge of Teams. However, all of the teachers' opinions changed from being either fearful or undesirable to enjoying using the tool.

D. Kolb (1984) defined the third learning method, reflective observation, as the learner must reflect on and observe their experiences from many perspectives. Participants were then asked if they thought the application was a great tool after using it. Five teachers stated that they "enjoy using it" now, "it's easy to use," and it was "better than Zoom." Three teachers stated that they found Teams to be "useful" but would "prefer Google Meet." One teacher stated that they used Teams, as it is required, but would prefer something else. Three teachers stated, "Teams is great and allows us to communicate with parents and the students." Overall, the teachers' reflections and observations from different angles determined that Teams was a good tool to use, as it enabled communication and it was "easy to use."

The following question involved leadership and if leadership provided support in learning how to use the new tool. All 13 teachers stated that "leadership sent links" and "tutorials." Six teachers stated that they believed that leadership "thinks that is how to provide support." One teacher felt that leadership "could have sent a questionnaire to ask what application they would like to use or give choice[s], but, no, they were lazy and just did not want to do that." Unanimously, teachers stated that they should "have received more support" throughout the pandemic. They do believe they are at a better place organizationally now than at the start of the pandemic. Overall, teachers reflected on their observations and experiences from many perspectives and were able to acknowledge what they needed or wanted to learn the new application and for future learning.

The fourth learning method is active experimentation, where the learner must use these theories to make decisions to solve problems (D. Kolb, 1984). Participants were then asked to describe what they learned and experienced and how it changed their opinions on technology. As stated previously, most participants had learned how to use Teams on their own, and what started as fear turned into contentment and confidence. Teachers used their experiences to ask for assistance from colleagues "with more experience with technology" to assist if help was needed. When some students "did not have access to [the] internet" nor had "the required software," teachers searched for other applications they could use to "reach all students." Teachers used what they learned and experienced to make decisions about the problem, internet, and tool access. The next section will discuss Research Question 4. Research Question 3 was discussed in more depth in Chapter 4 and its relation to the theories.

Research Question 4: How Have Teachers' Attitudes Changed Regarding Technology Use With a Required Practice of ICTs During the COVID-19 Pandemic?

Knowles's (1973) andragogy learning theory guided some interview questions (see Appendixes A and D). As previously stated under Research Question 1, Knowles (1973) defined the second assumption as experience, which states that adults gain experiences as they mature and develop. For interviews, teachers were questioned about the impact of the pandemic and described the experience of switching from in-person instruction to virtual learning. Many teachers stated that the "change was abrupt" and "has not been easy" with the "lack of internet access." All teachers stated that the biggest challenges from virtual learning were the "lack of internet access" for some students. Another challenge that arose was "a lot of students and a lot of situations," meaning that each student had a different situation that required flexibility or obligated teachers to provide different resources. Teachers were also asked if their attitudes

changed toward technology from prepandemic to now. All of them stated that their "attitudes changed." Most stated that their "attitudes are positive," whereas some stated that prepandemic they had "no preference" or would have preferred not to use technology.

Knowles (1973) defined readiness to learn as when adults are more prepared to learn about their positions in society and their priorities shift. Readiness to learn is the third assumption in the andragogy theory. Teachers were asked about attitudes toward new applications and learning to use them. All teachers stated that they "learned how to use" the applications required and not required to teach. The teachers know that "technology is here to stay" and will have to "continue to learn" and "modify and adapt many times" while technology advances and changes. However, 1 teacher stated that she had a few colleagues who "are still reluctant" to use certain applications. Subsequently, teachers were asked about their beliefs and opinions toward ICTs. All 16 teachers stated that ICTs are "useful"; however, seven or more teachers stated that they believed ICTs to be "complex and complicated" at times. But the majority of opinions and beliefs revealed were positive. As a teacher in a new virtual learning society, priorities shifted to learn and acquire the skills needed to use new applications.

Knowles's (1973) fourth assumption is orientation, which is defined as perspectives changing as adults learn while maturing and growing. Teachers were asked if beliefs or opinions toward ICTs have changed since they first began teaching until now. One teacher stated that she first "started teaching over 27 years ago" and that her "beliefs absolutely have changed." Years ago, this teacher specifically stated that "there wasn't the technology or tools available back then to now." She was "hesitant and fearful at first" but now "uses ICTs daily and could not imagine my day without them." Other teachers validated their positive opinions on ICTs from the beginning of their teaching career to now. Teachers could not imagine not using some form of

ICTs in their teaching. Yes, all of the teachers had to "adapt lessons" for students who did not have access, but teachers stated that they "will learn what they have to in order to teach their students."

The fifth assumption in the andragogy theory is motivation. Knowles (1973) defined motivation as follows: As adults mature and grow, their motivation goes extrinsic to intrinsic. All of the teachers stated that they did not receive "bonuses or incentives" to learn a new application or do their job. Additionally, leadership "did not provide any incentives or monetary value." Half of the teachers stated that their "students motivate" them as they enjoy teaching and "love helping the community." Moreover, 2 out of the 16 teachers stated, "Leadership should provide incentives," as they would make "teachers feel more valuable." When information is relevant and useful, adult learners are more likely to retain it. This is specifically relevant during the current coronavirus (COVID-19) pandemic when teachers were thrown into using ICTs daily. By immediately switching to learning online from in-person instruction, teachers faced many challenges. Findings indicated that teachers "were given links" and "tutorials" for training. Teachers had a negative belief or attitude about ICTs before, but attitudes have changed positively since daily usage.

Limitations

One limitation of this study was that participants were from only one urban school surrounding Bogotá. One school was chosen due to time constraints and the financial resources required to collect data from multiple schools. Another limitation included the experiences of primary teachers and not secondary teachers. Researchers could consider conducting a study where both primary and secondary teachers are participants or just secondary teachers. Another limitation was in-person observations of the classrooms, schools, and school environment due to

the pandemic. Therefore, in-person observations could not occur or be part of the data collection method, inconveniently limiting a data collection method.

Recommendations for Future Research

Due to this study being a case study with a focus on one school, future researchers might examine a mixed-methods approach but with a larger scope of participants from multiple urban public schools. The study would be interpretive and subjective but statistical, objective, and scientific. Moreover, the reasoning for the study would be both inductive and deductive. Inductive reasoning in a study identifies patterns; processes are based on experiences, facts, or observations. Deductive reasoning involves a hypothesis from a theory and then determining if the hypothesis was correct. Using both types can answer questions that may arise during the investigation. Additionally, a future study could use a mixed-methods approach to study transformational leadership and its effect on teachers' usage of ICTs in multiple urban public schools. A mixed-methods approach "establishes relationships among variables for quantitative methods, where qualitative methods explain factors underlying those same relationships" (Clark et al., 2020, p. 75).

Secondly, researchers could also conduct a comparative study between primary and secondary education. Schools in Colombia are built with primary and secondary education located at the same school campus. There are low-level private schools where studies have not been conducted. Researchers can investigate if leadership affects teachers' ICTs usage and if there are differences in students' academic scores. Then the results can be given to the Ministry of Education and Ministry of Information and Communication Technologies, where policy makers and stakeholders could use my findings to provide funding and more tools to all schools

and students. It creates equal opportunity among the lower social strata while meeting the goal of making Colombians digital citizens.

Thirdly, potential researchers could conduct a longitudinal study to obtain a profound understanding of how teachers perceive transformational leadership over time. Long-term studies could establish if teachers' experiences with transformational leadership differ at various times throughout the progression of research. Bass (1990) stated that leaders formulate a clear setting and attractive goals and aid in the achievement of the vision and inspirational motivation. Leaders who can exhibit clear values through being a role model (ideal influence) enable teachers to observe how to take charge for their personal development and actions. My findings from this study did not cover a long period of time to show leaders becoming more aware of their leadership style and improving it in the four components that make a transformational leader. Bass (1999) indicated that in a range of organizational contexts, transformational leadership has shown to be important, but there have not been many studies linked to teachers' usage and attitudes of ICTs, specifically in Colombia at the primary and secondary levels. Typically, teachers have not had a voice and are often forced to comply with the local mandates and orders given to them. This causes reluctance that affects teachers' usage and attitudes of ICTs even today with the current pandemic and virtual learning environment, where ICTs are an essential part of daily instruction. With a study that homes in on transformational leadership in public urban schools, leadership can adapt and improve each element to where teachers are motivated, feel valued, are given the resources they desire or need, and are intellectually stimulated to solve problems that arise.

Lastly, prospective researchers could survey transformational leadership characteristics with other leadership styles and investigate the influence on teachers' effective use of ICTs in

urban schools in Colombia. Leadership style is an essential component in teachers' practices and motivations (Eyal & Roth, 2011). Leadership has a great influence on change. My study findings determined that transformational leadership is marginally connected to the implementation of ICTs; thus, conducting another study to determine which leadership style influences teachers' use of ICTs in urban schools across Colombia would be valuable, specifically urban schools from all six regions of Colombia. There has not been a study of that nature on that topic.

Conclusion

Transformational leadership skills can be learned and developed (Bass, 1985). Schools that follow the transformational leadership model can use the four components: idealized influence, individual consideration, intellectual stimulation, and inspirational motivation. A transformational leader builds on teachers' resources, assists in growth, and creates an environment where change can occur. The four components of the transformational leadership theory succeed well collectively to bring positive organizational outcomes (Bass, 1985). My findings showed that teachers did not have a problem accepting change. The leaders' idealized influence subtly swayed teachers to assume change. Leadership respected and valued teachers' contributions and welcomed the change of attitudes to receiving the newly required platform and applications. While findings did not provide details on teachers' individual considerations, teachers briefly described the personal and professional concerns addressed with leadership and leadership's acknowledgment of the concerns. Intellectually, leadership encouraged teachers to think outside of the box or to search for solutions and assistance if a problem came about with any ICT tool. There were no statements or responses that proved leaders appreciated the teachers' inputs of fresh ideas through intellectual stimulation.

Furthermore, the component of transformational leadership that was faintly present was inspirational motivation. Inspirational motivation was indistinctly present due to leadership and teacher responses that displayed no motivational features or incentives. Leadership encouraged teachers to the best of their ability by providing basic training, openly communicating, and checking in periodically to assist. Abruptly switching from in-person instruction to all virtual instruction was a major organizational change for teachers and for students and leadership as well. Teachers motivated themselves to change their attitudes and do what was needed to teach virtually and reach all students.

Throughout the process, teachers welcomed technology and continued to acquire knowledge in ICT implementation. My findings confirmed that three out of four components of transformational leadership were interdependent and affected the use and attitudes of primary teachers toward ICT implementation. Teachers were influenced and brought positive social change to this school during the pandemic. This study could provide awareness about the transformational leadership style and influence organizational change in other public schools in the lower strata in Colombia. This study can also provide background information to the Ministry of Education to better assist the Ministry of Information and Communication Technologies plan to implement ICT policies nationwide by 2022.

References

Adegbenro, J., Gumbo, M., & Olakanmi, E. (2017). In-service secondary school teachers'
technology integration needs in an ICT-enhanced classroom. *Turkish Online Journal of
Educational Technology*, *16*(3), 79–87. https://files.eric.ed.gov/fulltext/EJ1152645.pdf

Afshari, M., Bakar, K. A., Luan, W. S., & Siraj, S. (2012). Factors affecting the transformational
leadership role of principals in implementing ICT in schools. *Turkish Online Journal of
Educational Technology*, *11*(4), 164–176. https://files.eric.ed.gov/fulltext/EJ989265.pdf

Akinyode, B. F. (2018). Step by step approach for qualitative data analysis. *International
Journal of Built Environment and Sustainability*, *5*(3), 163–174.
https://doi.org/10.11113/ijbes.v5.n3.267

Albugami, S., & Ahmed, V. (2015). Success factors for ICT implementation in Saudi secondary
schools: From the perspective of ICT directors, head teachers, teachers, and students.
*International Journal of Education and Development using Information and
Communication Technology*, *11*(1), 36–54.
https://files.eric.ed.gov/fulltext/EJ1061479.pdf

Alcaldía Mayor de Bogotá. (2019). *Secretaría distrital de planeación, localidad Rafael Uribe*.
District Planning Secretary. http://www.sdp.gov.co/gestion-estudios-
estrategicos/estratificacion/estratificacion-por-localidad

Alcaldía Mayor de Bogotá. (2020a). Diagnostico propósito no.1. Hacer un nuevo contrato social
con igualdad de oportunidades para la inclusion social, productiva y política.
http://www.rafaeluribe.gov.co/sites/rafaeluribe.gov.co/files/documentos/tabla_archivos/di
agnostico_ruu.pdf

Alcaldía Mayor de Bogotá. (2020b). *Banco distrital de programas y proyectos. Ficha de estadística básica de inversión local EBI-L.* Distrito Capital. http://www.sdp.gov.co/sites/default/files/1539_018_rafael_uribe_uribe_0.pdf

Allen, N., Grigsby, B., & Peters, M. (2015). Does leadership matter? Examining the relationship among transformational leadership, school climate, and student achievement. *International Journal of Educational Leadership Preparation*, *10*(2), 1–22. https://files.eric.ed.gov/fulltext/EJ1083099.pdf

Al-Mahdy, Y., Enam, M., & Hallinger, P. (2018). Assessing the contribution of principal instructional leadership and collective teacher efficacy to teacher commitment in Oman. *Science Direct*, *69*, 191–201. https://doi.org/10.1016/j.tate.2017.10.007

Alwazna, R. Y. (2014). Ethical aspects of translation: Striking a balance between following translation ethics and producing a TT for serving a specific purpose. *English Linguistics Research*, *3*(1), 51–57. https://doi.org/10.5430/elr.v3n1p51

Anderson, L. B., Bjørnholt, B., Bro, L. L., & Holm-Petersen, C. (2018). Achieving high quality through transformational leadership: A qualitative multilevel analysis of transformational leadership and perceived professional quality. *Public Personnel Management*, *47*(1), 51–72. https://doi.org/10.1177/0091026017747270

Andoh-Baidoo, F., Osatuyi, B., & Kunene, K. (2014). ICT capacity as the investment and use of ICT: Exploring its antecedents in Africa. *Information Technology for Development*, *20*(1), 44–59. https://doi.org/10.1080/02681102.2013.804399

Apsorn, A., Sisan, B., & Tungkunanan, P. (2019). Information and communication technology leadership of school administrators in Thailand. *International Journal of Instruction*, *12*(2), 639–650. https://eric.ed.gov/?id=EJ1210977

Avolio, B. J., & Bass, B. M. (1995). Individual consideration viewed at multiple level of analysis: A multi-level framework for examining the diffusion of transformational leadership. *Leadership Quarterly*, *6*(2), 199–218. https://doi.org/10.1016/1048-9843(95)90035-7

Barnett, A. M. (2005). The impact of transformational leadership style of the school principal on school learning environments and selected teacher outcomes [Doctoral dissertation, University of Western Sydney]. Research Direct.

Barrera-Osorio, F., Maldonado, D., & Rodríguez, C. (2012). *Calidad de educación básica y media en Colombia: Diagnóstico y propuestas*. Centro de Estudios sobre Desarrollo Económico. https://repository.urosario.edu.co/handle/10336/10907

Bass, B. M. (1985). Leadership and performance beyond expectation. Free Press

Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, *18*(3), 19–31. https://doi.org/10.1016/0090-2616(90)90061-S

Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, *8*, 9–32. https://doi.org/10.1080/135943299398410

Bass, B. M., & Avolio, B. J. (Eds.). (1994). Improving organizational effectiveness through transformational leadership. SAGE Publications.

Bautista Díaz, D. A., del Pilar García Gutiérrez, Z., Casas Casallas, E., Gómez Amaya, J., & Gutiérrez Castro, B. A. (2019). Ludomática en ambientes de aprendizaje: Educación rural en el posconflicto Colombiano. *Latin American Journal of Content & Language Integrated Learning*, *22*(3), 359–376. https://doi.org/10.5294/edu.2019.22.3.2

Bellei, C., Vanni, X., Valenzuela, J. P., & Contreras, D. (2016). School improvement trajectories: An empirical typology. *International Journal of Research, Policy and Practice*, *27*(3), 275–292. https://doi.org/10.1080/09243453.2015.1083038

Bingimlas, K. A. (2008). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science & Technology Education*, *5*(3), 235–245. https://doi.org/10.12973/ejmste/75275

Bogliacino, F., Lozano, J. L., & Reyes, D. (2017). Socioeconomic stratification and stereotyping: Lab-in-the-field evidence from Colombia. *International Review of Economics*, *65*(1), 77–118. https://doi.org/10.1007/s12232-017-0285-4

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40. https://www.researchgate.net/publication/240807798

Bushweller, K. (2020, June 3). How COVID-19 is shaping tech use. What that means when schools reopen. *Education Week*. https://www.edweek.org/ew/articles/2020/06/03/how-covid-19-is-shaping-tech-use-what.html

Camelo, G. E. H., Torres, J. M. T., Reche, M. P. C., & Costa, R. S. (2018). Using and integration of ICT in a diverse educational context of Santander (Colombia). *Journal of Technology & Science Education*, *8*(4), 254–267. https://doi.org/10.3926/jotse.314

Cárdenas, J., Ñopo, H., & Castañeda, J. (2012). *Equidad en la diferencia: Políticas para la movilidad social de grupos de identidad* [Equity in difference: Policies for the social mobility of identity groups]. Universidad de los Andes, Departamento Nacional de Planeación. http://hdl.handle.net/1992/8362

Carter, V. (2017). *Student achievement: Definition, factors & research*. Study.com. https://study.com/academy/lesson/student-achievement-definition-factors-research.html - transcriptHeader

Centro de Estudios Distributivos, Laborales y Sociales & World Bank. (2017). *LAC equity tabulations of SEDLAC (CEDLAS and the World Bank) and world development indicators*. https://www.worldbank.org/en/topic/poverty/lac-equity-lab1

Chen, J. C. (2014). Teaching nontraditional adult students: Adult learning theories in practice. *Teaching in Higher Education*, *19*(4), 406–418. https://doi.org/10.1080/13562517.2013.860101

Chen, W. (2013). School leadership in ICT implementation: Perspectives from Singapore. *Asia-Pacific Education Researcher*, *22*(3), 301–311. https://doi.org/10.1007/s40299-012-0055-8

Cherry, K. (2020). *Transformational leadership. A closer look at the effects of transformational leadership*. Verywell Mind. https://www.verywellmind.com/what-is-transformational-leadership-2795313

Cifuentes, G., & Vanderlinde, R. (2015). ICT leadership in higher Education: A multiple case study in Colombia. *Comunicar*, *23*(45), 133–141. https://doi.org/10.3916/C45-2015-14

Clark, J. P., Porath, S., Thiele, J., & Jobe, M. (2020). *Action research*. New Prairie Press. https://newprairiepress.org/ebooks/34

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, S95–S120. https://www.jstor.org/stable/2780243

Collins, C., & Stockton, C. M. (2018). The central role of theory in qualitative research. *International Journal of Qualitative Methods, 17*(1), 1–10. https://doi.org/10.1177/1609406918797475

Contraloría General de la República. (2017). *Efecto redistributive del sistema general de participaciones* [Redistrubutive effect of the general systems transfers]. https://www.contraloria.gov.co/documents/20181/452124/Efecto+redistributivo+del+Sistema+General+de+Participaciones+Resultados+y+perspectivas+en+los+sectores+de+Salud+y+Educación-2017.pdf/9651f816-62f3-4a17-8899-94cef6a8d971?version=1.0

Cortés, J. (2018, February). *¿Sabe usted cómo funciona la estratificación? Aquí se lo contamos*. Bogotá Mayors Office. https://bogota.gov.co/mi-ciudad/planeacion/estratificacion-todo-lo-que-debe-saber

Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, *11*, 1–9. https://doi.org/10.1186/1471-2288-11-100

Cuadros, M. P., Reche, M. P., & Lucena, F. J. (2016). Analysis of leadership styles developed by teachers and administrators in technical-technological programs: The case of the Cooperative University of Colombia. *International Journal of Leadership in Education*, *21*(1), 1–16. https://doi.org/10.1080/13603124.2016.1172734

Cuban, L., & Jandrić, P. (2015). The dubious promise of educational technologies: Historical patterns and future challenges. *E-Learning and Digital Media*, *12*(3–4), 425–439. https://doi.org/10.1177/2042753015579978

Cullen, E. (2018, September 10). What is technology-enhanced learning, and why is it important? *Mentimeter*. https://www.mentimeter.com/blog/interactive-classrooms/what-is-technology-enhanced-learning-and-why-is-it-important

Departamento Administrativo Nacional Estadistica. (2020). *Censo nacional de población y vivienda, 2018 Colombia*. Dane Información Para Todos. https://www.dane.gov.co/files/censo2018/infografias/info-CNPC-2018total-nal-colombia.pdf

Departamento Nacional de Planeación. (2015a). *El campo Colombiano: Un camino hacia el bienestar y la paz misión para la transformación del campo rural Colombia* [A path toward well-being and peace mission for the transformation of rural areas]. https://colaboracion.dnp.gov.co/cdt/agriculturapecuarioforestal y pesca/el campo colombiano un caminio hacia el bienestar y la paz mtc.pdf

Departamento Nacional de Planeación. (2015b). *Plan nacional de desarrollo: Todos por un nuevo país tomos 1 y 2* [National development plan: Everyone for a new country volumes 1 and 2]. https://colaboracion.dnp.gov.co/cdt/pnd/pnd 2014-2018 tomo 1 internet.pdf

Derbel, F. (2017). Technology-capable teachers transitioning to technology-challenged schools. *Electronic Journal of e-Learning*, *15*(3). 269–280. https://eric.ed.gov/?id=EJ1146050

Echazarra, A., & Radinger, T. (2019, March). *Learning in rural schools: Insights from PISA, TALIS and the literature*. Organisation for Economic Co-operation and Development Publishing. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/WKP(2019)4&docLanguage=En

Eisner, E. W. (1991). The enlightened eye: Qualitative inquiry and the enhancement of educational practice. Macmillan.

Ejimabo, N. O. (2015). The effective research process: Unlocking the advantages of ethnographic strategies in the qualitative research methods. *European Scientific Journal*, *11*(23), 356–383. https://eujournal.org/index.php/esj/article/view/6090

Eyal, O., & Roth, G. (2011). Principals' leadership and teachers' motivation self-determination theory analysis. *Journal of Educational Administration*, *49*(3), 256–275. https://doi.org/10.1108/09578231111129055

FitzPatrick, B. (2019). Validity in qualitative health education research. *Currents in Pharmacy Teaching and Learning*, *11*(2), 211–217. https://doi.org/10.1016/j.cptl.2018.11.014

Función Pública. (2019). *Ley 142 de 1994*. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=2752

Galvis, H. A. (2012). Understanding beliefs, teachers' beliefs and their impact on the use of computer technology. *Issues in Teachers' Professional Development*, *14*(2), 95–112. https://files.eric.ed.gov/fulltext/EJ1051550.pdf

Gamboa, L., & Londoño, E. (2017). Assessing educational unfair inequalities at a regional level in Colombia. *Lecturas de Economía* (*Readings in Economic*), *86*, 97–133. https://doi.org/10.17533/udea.le.n83a04

Gencer, M. S., & Samur, Y. (2016). Leadership styles and technology: Leadership competency level of educational leaders. *Procedia: Social and Behavioral Sciences*, *229*, 226–233. https://doi.org/10.1016/j.sbspro.2016.07.132

Glossary of Education Reform. (2013). *Professional development*. https://www.edglossary.org/professional-development/

Guevara, J. D., & Shields, R. (2019). Spatializing stratification: Bogotá. *Ardeth*, *4*, 223–236. https://doi.org/10.17454/ARDETH04.13

Guillermopreito, A. (2020, May 7). Fear, anger, desperation: How Bogotá's residents are coping with COVID-19. *National Geographic*. https://www.nationalgeographic.com/history/article/fear-anger-desperation-how-bogota-residents-are-coping-covid-19

Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education*, *3*(3), 329–351. https://doi.org/10.1080/0305764032000122005

Hardesty, J., McWilliams, J., & Plucker, J. A. (2014). Excellence gaps: What they are, why they are bad, and how smart contexts can address them … or make them worse. *High Ability Studies*, *25*(1), 71–80. https://doi.org/10.1080/13598139.2014.907646

Haughey, M. (2006). The impact of computers on the work of the principal: Changing discourses on talk, leadership and professionalism. *School Leadership and Management*, *26*(1), 23–36. https://doi.org/10.1080/13634230500492897

Hennessy, S., Harrison, D., & Wamakote, L. (2010). Teacher factors influencing classroom use of ICT in sub-Saharan Africa. *Itupale Online Journal of African Studies*, *2*, 39–54. https://docs.edtechhub.org/lib/RXIW5GY7

Herr, K., & Anderson, G. L. (2015). The action research dissertation: A guide for students and faculty. SAGE Publications.

Jacob, B., Berger, D., Hart, C., & Loeb, S. (2016). Can technology help promote equality of educational opportunities. *Russell Sage Foundation Journal of the Social Sciences*, *2*(5), 242–271. https://www.rsfjournal.org/content/rsfjss/2/5/242.full.pdf

Jaramillo, S. G. (2020, October 9). COVID-19 and primary and secondary education: The impact of the crisis and public policy implications for Latin America and the Caribbean. United

Nations Development Programme (UNDP) Latin America and the Caribbean.

https://www.latinamerica.undp.org/content/rblac/en/home/library/crisis_prevention_and_

recovery/covid-19-y-educacion-primaria-y-secundaria--repercusiones-de-la-.html

Jessel, E. (2017, November 9). "If I'm stratum 3, that's who I am": Inside Bogotá's social

stratification system. *Guardian*. https://www.theguardian.com/cities/2017/nov/09/bogota-

colombia-social-stratification-system

Karatza, Z. (2019). Information and communication technology (ICT) as a tool of differentiated

instruction: An informative intervention and a comparative study on educators' views and

extent of ICT use. *International Journal of Information and Education Technology*, *9*(1),

8–15. https://doi.org/10.18178/ijiet.2019.9.1.1165

Kim, P., Hagashi, T., Carillo, L., Gonzales, I., Makany, T., Lee, B., & Gàrate, A. (2011).

Socioeconomic strata, mobile technology, and education: A comparative analysis.

Educational Technology Research and Development, *59*, 465–486.

https://doi.org/10.1007/s11423-010-9172-3

Kisanjara, S. B., Tossy, T. M., Sife, A. S., & Msanjila, S. S. (2017). An integrated model for

measuring the impacts of e-learning on students' achievement in developing countries.

*International Journal of Education and Development Using Information and

Communication Technology*, *13*(3), 109–130.

https://files.eric.ed.gov/fulltext/EJ1166617.pdf

Knowles, M. (1970). The modern practice of adult education: Andragogy verses pedagogy.

Cambridge.

Knowles, M. (1973). *The adult learner: A neglected species* (3rd ed.). Gulf Publishing.

Kolb, A. Y., & Kolb, D. A. (2012). Experiential learning theory. In N. M. Seel (Ed.),

    Encyclopedia of the sciences of learning (pp. 1215–1219). Springer.

Kolb, D. A. (1984). Experiential learning experience as the source of learning and development.

    Prentice Hall.

Kurt, S. (2016). *Definitions of educational technology*. Educational Technology.

    https://educationaltechnology.net/definitions-educational-technology/

Leavy, P. (2017). *Research design*. Guilford Press.

Lee, J., & Choi, H. (2017). What affects learner's higher-order thinking in technology-enhanced

    learning environments? The effects of learner factors. *Computers & Education*, *115*, 143–

    152. https://doi.org/10.1016/j.compedu.2017.06.015

Lee, R. E. (2000). The relationship between the biodata of city and country managers and their

    perceptions of their own transformational leadership qualities of idealized influence,

    inspirational motivation, intellectual stimulation, and individual consideration

    (Publication No. 9968178) [Doctoral dissertation, Nova Southeastern University].

    ProQuest.

Leithwood, K., Day, C., Sammons, P., Hopkins, D., & Harris, A. (2008). *Successful school*

    leadership: What is it and how it influences pupil learning. National College for School

    Leadership. http://www.nysed.gov/common/nysed/files/principal-project-file-55-

    successful-school-leadership-what-it-is-and-how-it-influences-pupil-learning.pdf

Leithwood, K., Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). *How leadership influence*

    student learning. Wallace Foundation. https://www.wallacefoundation.org/knowledge-

    center/documents/how-leadership-influences-student-learning.pdf

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.

Lwoga, E. T., & Komba, M. (2015). Antecedents of continued usage intentions of web-based learning management system in Tanzania. *Education + Training*, *57*(7), 738–756. https://doi.org/10.1108/ET-02-2014-0014

Macharia, J., & Pelser, T. (2014). Key factors that influence the diffusion and infusion of information and communication technologies in Kenyan higher education. *Studies in Higher Education*, *39*(4), 695–709. https://doi.org/10.1080/0307579.2012.729033

Marcos, A. (2018, April 20). Los estratos en Colombia: Eres el lugar en el que vives. *El País*. https://elpais.com/internacional/2018/04/20/colombia/1524176587_818282.html

Mashinini, M. J. (2008). Challenges of ICT policy for rural communities: A case study from South Africa. In C. Avgerou, M. L. Smith, & P. van den Besselaar (Eds.), *International federation for information processing* (Vol. 282; pp. 125–137). Springer. https://link.springer.com/content/pdf/10.1007%2F978-0-387-84822-8_9.pdf

Merriam, S. B., & Bierema, L. L. (2014). *Adult learning: Linking theory and practice*. Jossey-Bass.

Merriam-Webster. (2020). Digital divide. In *Merriam-Webster.com dictionary*. https://www.merriam-webster.com/dictionary/digital divide

Ministerio de Educación. (2018). *Plan especial de educación rural: Hacia el desarrollo rural y la construcción de paz* [Special rural education plan: Towards rural development and the construction of peace]. https://www.mineducacion.gov.co/1759/articles-385568_recurso_1.pdf

Ministry of Information and Communication Technologies. (2021). *Ministry of ICT. El future digital es de todos*. https://mintic.gov.co/portal/inicio/Micrositios/English-overview/Ministry-of-ICT/

Ng, W. L. (2008). Transformational leadership and the integration of information and communications technology into teaching. *Asia Pacific Education Researcher*, *17*(1), 1–14. https://repository.nie.edu.sg/bitstream/10497/14260/1/TAPER-17-1-1.pdf

Noland, A., & Richards, K. (2015). Servant teaching: An exploration of teacher servant leadership on student outcomes. *Journal of the Scholarship of Teaching and Learning*, *15*(6), 16–38. https://doi.org/10.14434/josotl.v15i6.13928

Nowell, L., Norris, J., White, D., & Moules, N. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), 1–13. https://doi.org/10.1177/1609406917733847

Organisation for Economic Co-operation and Development. (2006). *Glossary of statistical terms*. https://stats.oecd.org/glossary/detail.asp?ID=4842 - :~:text=The Gini index measures the,from a perfectly equal distribution.&text=A Gini index of zero,equality and 100, perfect inequality

Organisation for Economic Co-operation and Development. (2014). *OECD territorial reviews: Colombia 2014*. https://doi.org/10.1787/9789264224551-en

Organisation for Economic Co-operation and Development. (2016). *PISA 2015 results (Volume II): Policies and practices for successful schools*. https://www.oecd.org/education/pisa-2015-results-volume-ii-9789264267510-en.htm

Organisation for Economic Co-operation and Development. (2017). *Education at a glance 2017: OECD indicators*. https://doi.org/10.1787/eag-2017-en

Organisation for Economic Co-operation and Development. (2019). *Education at a glance 2019: OECD indicators*. https://doi.org/10.1787/f8d7880d-en

Organisation for Economic Co-operation and Development. (2020a). *School education during COVID-19: Were teachers and students ready*? http://www.oecd.org/education/Colombia-coronavirus-education-country-note.pdf

Organisation for Economic Co-operation and Development. (2020b). *TALIS 2018 results (Volume II): Teachers and school leaders as valued professionals*. https://doi.org/10.1787/19cf08df-en

Özen, F. (2018). Investigation of the experiences of classroom teacher candidates in the reconstruction of gender role: A case study in Turkey. *Journal of Education and Training Studies*, *6*(8), 29–43. https://doi.org/10.11114/jets.v6i8.3211

Pålsson, E. (2020). *Colombia's socio-economic stratification system: An urbanization policy that causes intergroup conflict*? [Doctoral dissertation, Linnaeus University]. Digitala Vetenskapliga Arkivet. http://www.diva-portal.org/smash/get/diva2:1388591/FULLTEXT02.pdf

Patton, M. (1990). *Qualitative evaluation and research methods*. SAGE Publications. https://legacy.oise.utoronto.ca/research/field-centres/ross/ctl1014/Patton1990.pdf

Pinzón Capador, S. V., & Guerrero Nieto, C. H. (2018). Living the teaching practicum within dichotomies: The story from within when implementing ICTs in the English language classroom. *HOW*, *25*(2), 69–89. https://files.eric.ed.gov/fulltext/EJ1187727.pdf

Pont, B., Nusche, D., & Moorman, H. (2008). *Improving school leadership*. Organisation for Economic Co-operation and Development. https://www.oecd.org/education/school/44374889.pdf

Programa de las Naciones unidas para el Desarrollo. (2011). *Colombia rural. Razones para la esperanza. Informe nacional de desarrollo human 2011* [Rural Colombia. Reasons for

hope. National human development report 2011]. United Nations Development Program. https://dds.cepal.org/redesoc/publicacion?id=1623

Radinger, T., Echazarra, A., Guerrero, G., & Valenzuela, J. P. (2018). *OECD reviews of school resources: Colombia 2018*. Organisation for Economic Co-operation and Development. https://doi.org/10.1787/9789264303751-en

Ritzhaupt, A., Liu, F., Dawson, K., & Barron, A. (2013). Differences in student information and communication technology literacy based on socio-economic status, ethnicity, and gender: Evidence of a digital divide in Florida schools. *Journal of Research on Technology in Education*, *45*(4), 291–307. https://files.eric.ed.gov/fulltext/EJ1010656.pdf

Rogers, R. (2018). Coding and writing analytic memos on qualitative data: A review of Johnny Saldaña's the coding manual for qualitative researchers. *Qualitative Report*, *23*(4), 889–892. https://doi.org/10.46743/2160-3715/2018.3459

Rojas-Rojas, Y. A. (2018). An ICT tool in a rural school: A drawback for language students at school? *Enletawa Journal*, *11*(1), 91–109. https://revistas.uptc.edu.co/index.php/enletawa_journal/article/download/8977/7511/

Rosenblit, S., & Gros, B. (2011). E-learning: Confusing terminology, research gaps and inherent challenges. *International Journal of E-learning and Distance Education*, *25*(1), 1–36. http://www.ijede.ca/index.php/jde/article/view/729/1206

Rosenthal, M. (2016). Qualitative research methods: Why, when, and how to conduct interviews and focus groups in pharmacy research. *Currents in Pharmacy Teaching and Learning*, *8*(4), 509–516. https://doi.org/10.1016/j.cptl.2016.03.021

Roth, M. W. (2018, January). Translation and its consequences in qualitative social research: On distinguishing "the social" from "the societal." *Forum Qualitative Sozialforschung* /

Forum: Qualitative Social Research, *19*(1), 1–20. https://www.qualitative-research.net/index.php/fqs/article/view/2988/4186

Saldaña, J. (2014). Coding and analysis strategies. In P. Leavy (Ed.), *The Oxford handbook of qualitative research* (pp. 581–605). Oxford University Press.

Saldaña, J., & Omasta, M. (2018). *Qualitative research: Analyzing life*. SAGE Publications.

Sánchez, J. (2018). *Review of policies to improve the effectiveness of resource use in schools: Country background report for Colombia*. Organisation for Economic Co-operation and Development. Ministerio de Educación Nacional [Ministry of National Education]. http://www.oecd.org/education/schoolresourcesreview.htm

Schuh, S. C., Zhang, X., & Tian, P. (2013). For the good or the bad? Interactive effects of transformational leadership with moral and authoritarian leadership behaviors. *Journal of Business Ethics*, *116*(3), 629–640. https://psycnet.apa.org/doi/10.1007/s10551-012-1486-0

Sepúlveda Rico, C. E., López Gamacho, D., Gallego Acevedo, J. M., Acosta, J., Bernal, L., Bonilla, J., Gutiérrez, L. H., Maluendas, A., Rivas, G., & Tejedor, F. (2014). *Los límites de la estratificación: En busca de alternativas*. Bogotá Humana. http://www.sdp.gov.co/sites/default/files/los_limites_estratificacion.pdf

Shengru, L., Shinobu, Y., & Jin-ichi., T. (2018). Understanding factors affecting primary school teachers' use of ICT for student-centered education in Mongolia. *International Journal of Education and Development using Information and Communication Technology*, *14*(1), 103–117. https://files.eric.ed.gov/fulltext/EJ1178363.pdf

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 63–75. https://www.pm.lth.se/fileadmin/_migrated /content_uploads/Shenton_Trustworthiness.pdf

Sherman, B. (2018, April 13). *Exploring the culture of instructional ICT use in an educational context* [Paper presentation]. Annual Meeting of the American Educational Research Association, New York, NY, United States. https://www.researchgate.net/publication/330844909_Exploring_the_Culture_of_Instruct ional_ICT_use_in_an_Educational_Context

Sianou-Kyrgiou, E., & Tsiplakides, I. (2012). Digital divide: Students' use of the internet and emerging forms of social inequalities. In A. Jimoyiannis (Ed.), *Research on e-learning and ICT in education* (pp. 55–68). Springer.

Simon, M. K, & Goes, J. (2013). *Dissertation and scholarly research: Recipes for success*. CreateSpace.

Sosa Neira, E. A., Salinas Ibá, J. M., & De Benito Crosetti, B. (2018). Model of incorporation of emerging technologies in the classroom (MIETC). *International Journal of Emerging Technologies in Learning*, *13*(6), 124–148. https://online-journals.org/index.php/i-jet/article/view/8226

Stolaki, A., & Economides, A. A. (2018). The creativity challenge game: An educational intervention for creativity enhancement with the integration of information and communication technologies (ICTs). *Computers & Education*, *123*, 195–211. https://doi.org/10.1016/j.compedu.2018.05.009

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *Canadian Journal of Hospital Pharmacy*, *68*(3), 226–231. https://doi.org/10.4212/cjhp.v68i3.1456

Tawfik, A., Reeves, T., & Stich, A. (2016). Intended and unintended consequences of educational technology on social inequality. *Tech Trends: Linking Research & Practice to Improve Learning*, *60*(6), 598–605. https://doi.org/10.1007/s11528-016-0109-5

TED. (2015, November 22). *Technology in education: From novelty to norm | Joel Handler* [Video]. YouTube. https://youtu.be/U0lNhayjJVE

Tes Editorial. (2018). *What is pedagogy*? https://www.tes.com/news/what-is-pedagogy-definition

Umugiraneza, O., Bansilal, S., & North, D. (2017, May). Exploring teachers' use of technology in teaching and learning mathematics in KwaZulu-Natal schools. *South African Journal of Education*, *37*(2), 1–13. https://doi.org/10.15700/saje.v37n2a1306

United Nations (2020a). *Policy brief: Education during COVID-19 and beyond*. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf

United Nations Educational, Scientific and Cultural Organization. (2020a). *Addressing the gender dimensions of school closures*. https://unesdoc.unesco.org/ark:/48223/pf0000373379

United Nations Educational, Scientific and Cultural Organization. (2020b). *Supporting teachers and education personnel during times of crisis*. https://unesdoc.unesco.org/ark:/48223/pf0000373338/PDF/373338eng.pdf.multi

Uribe-Mallarino, C., (2008). Estratificación social en Bogotá: De la política pública a la

    dinámica de la segregación social. *Universitas Humanística*, *65*, 139–171.

    https://revistas.javeriana.edu.co/index.php/univhumanistica/article/view/2245/1512

Villegas, M. G., Espinosa Restrepo, J. R, Ángel, F. J., & Parra Heredia, J. D. (2013). *Separate

    and unequal: Education and social class in Colombia*. Dejusticia.

    https://www.dejusticia.org/wp-content/uploads/2017/04/fi_name_recurso_591.pdf

Volman, M., van Eck, E., Heemskerk, I., & Kuiper, E. (2005). New technologies, new

    differences. Gender and ethnic differences in pupils' use of ICT in primary and secondary

    education. *Computers & Education*, *45*(1), 35–55.

    https://doi.org/10.1016/j.compedu.2004.03.001

Wallet, P. (2016). *ICT in education statistics: Shifting from regional reporting to global

    monitoring: Progress made, challenges encountered, and the way forward*. United

    Nations Educational, Scientific and Cultural Organization.

    http://unesdoc.unesco.org/images/0024/002455/245572E.pdf

Wei, R., Darling-Hammond, L., & Adamson, F. (2010). *Professional development in the United

    States: Trends and challenges*. National Staff Development Council.

    https://edpolicy.stanford.edu/sites/default/files/publications/professional-development-

    united-states-trends-and-challenges.pdf

White, S. (2018). *What is transformational leadership? A model for motivating innovation*. CIO.

    https://www.cio.com/article/3257184/what-is-transformational-leadership-a-model-for-

    motivating-innovation.html

World Bank. (2018). *Population estimates and projections*. Retrieved August 22, 2020, from

    https://databank.worldbank.org/source/population-estimates-and-projections

World Bank. (2019). *Poverty*. Retrieved March 2, 2021, from

https://data.worldbank.org/topic/poverty

Worldometer. (2020). *Colombia population*. https://www.worldometers.info/world-

population/colombia-population/

Yamamoto, Y., & Yamaguchi, S. (2019). Relationships between ICT implementation at schools

and factors related to transformational leadership: A case study of primary school in

Mongolia. *International Journal of Education and Development Using Information and

Communication Technology*, 15(2), 45–61.

https://files.eric.ed.gov/fulltext/EJ1220748.pdf

Yunda, J, G. (2017). *Juntos pero no revueltos: The influence of the social stratification system

on urban densification patterns in Bogotá, Colombia* [Doctoral dissertation, University of

Texas]. Texas Scholar Works, University of Texas Libraries.

https://repositories.lib.utexas.edu/handle/2152/47272

Zyad, H. (2016). Integrating computers in the classroom: Barriers and teachers' attitudes.

International Journal of Instruction, *9*(1), 65–78.

https://files.eric.ed.gov/fulltext/EJ1086973.pdf

Appendix A: Interview Protocol

Interview Protocol

Institution: _____

Interviewee (Title and Name): _____

Interviewer: _____

Teacher and School Leadership Interviews

Introductory Protocol

Before we get started, I want to make sure that you have already signed the consent form to facilitate my note-taking, and to ensure that I am able to get all of the details from this interview, I would like to audiotape our conversations today. I assure you that your personal information will remain confidential. I will be compiling a report, which will reference details from today's interview but will not reference your name or any personally identifiable information about yourself or others. For your information, only the researcher on the study and a translator will be privy to the tapes, which will be stored in a safe for three years and then eventually destroyed after the three years have passed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that (1) all information will be held confidential, (2) your participation is voluntary, and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you for your agreeing to participate.

I have planned this interview to last no longer than one hour. During this time, I will have several questions that I would like to cover.

Introduction

You have been selected to speak with me today because you have been identified as someone who teaches in the classroom or someone who is in a leadership position. My research study as a whole focuses on if transformational leadership affects teachers' use and attitudes toward information and communication technologies (ICTs) in daily instruction. My study does not aim to assess your practices but rather try to learn more about your experiences with ICT and if your leadership practices affect how you view ICTs.

A. Interviewee Background

How long have you been …

_____ in your present position?

_____ at this institution?

Interesting background information on the interviewee:

What is your highest degree? _____

What is your field of study? _____

1. Briefly describe your role (director, administrator, specialist, committee, teacher, etc.) as it relates to ICTs (if appropriate).

Research Question 1: What challenges do primary school teachers encounter when they attempt to assimilate ICT into their lessons?

Knowles's (1973) andragogy learning theory; five assumptions will be used as a guide for the interview with questions stemming from each one to collect data to answer the research questions.

Self-concept: As adults mature, they change from being reliant on others to being self-reliant.

Q1: Can you describe to me the challenges you encounter when using ICTs in your lesson.

Q2: How did it make you feel?

Q3: What did you do to help with the problems? Did you seek assistance?

Experience: Adults gain experiences as they mature and develop.

Q4: Describe to me your experiences with ICTs in the classroom. (How did that make you feel?—follow up question if needed).

Q5: Have you received training on the required ICT tools that you have to use? If so, has it been helpful?

Research Question 4: How have teachers' attitudes changed regarding technology use with a required practice of ICTs during the COVID pandemic?

Q6: With the impact of the pandemic, describe to me your experience of quickly switching from in-person instruction to virtual learning.

Q7: What challenges have surfaced from teaching virtually?

Q8: Has your attitudes or feelings toward technology use changed since before the pandemic until now? If so, how? How did you feel about technology use prior, and how do you feel about it now.

Readiness to learn: Adults are more prepared to learn about their positions in society, and their priorities shift.

Q9: When new applications are incorporated into the curriculum or lesson, describe to me your attitudes toward learning how to use it.

Q10: What are your beliefs or opinions toward ICTs?

Orientation: Perspectives are changed as adults learn while maturing and growing.

Q11: Have your beliefs or opinions toward ICTs changed since you first began teaching until now? If so, how?

Q12: Do you have any interest in continuing to learn how to use new applications or ICTs? If so, why? If not, why?

Motivation: As adults mature and grow, their motivation goes extrinsic to intrinsic.

Q13: Describe to me what motivates you to learn how to use new and old ICTs. If your leadership provides motivation, please give examples of how (professionally and personally).

Research Question 3: What role does transformational leadership play in the availability of resources and support of classroom technology implementation?

Q14: Explain how leadership has provided support? (individualized consideration, idealized influence, TL component)

Q15: How can leadership provide more support or help you to utilize the tools given to you?

Q16: Has leadership assisted with the challenges of teaching virtually? If so, how? (intellectual stimulation, individualized consideration, TL component)

Q17: Does your leadership provide any incentives? If so, what kind (bonus, more pay) (inspirational motivation, TL component)

Appendix B: Focus Group Protocol

Hello. I hope everyone is doing well. My goal today is to find out your experiences regarding ICT integration into your lessons. This includes new applications, software, or other technological devices or applications needed for your daily instruction. This will be an open discussion, and I ask that everyone be respectful when someone is speaking and sharing his or her experience with us. I will be conducting focus groups. This one, as you can see, contains primary school teachers. When I have finished collecting data, I will produce a report describing what we have found in terms of the main themes that you discuss with me. I will be recording this focus group and will use this recording for my analysis. When I write about my findings, I may use direct quotes from this group, but I will not identify you individually, and any quotes that I use will be attributable to a role or individual. Again, any personally identifiable information will not be used.

Prior to joining this group, you received an email with a consent form. The form stated that (1) all information will be held confidential, (2) your participation is voluntary, and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Again, thank you for agreeing to participate, and let's get started.

Focus Group Questions

Research Question 2: How do primary teachers perceive their experiences regarding ICT integration?

Kolb's (1984) experiential learning theory will guide the focus group discussions.

Learning Cycle: concrete experience, abstract conceptualization, reflective observation, and active experimentation.

Categories: sensory, experiences, opinions, knowledge, feelings.

Concrete Experience: the learner must apply themselves fully, openly, and without bias in new experiences.

Q1: Describe an experience where you were required to learn a new application to incorporate in your instruction?

Q2: What emotion did that implore?

Abstract Conceptualization: the learner must create concepts that integrate their observations into logically sound theories.

Q3: After using the new application, what were your opinions on using it in your instruction?

Q4: What was your knowledge about the new application?

<u>Reflective Observation</u>: the learner must reflect on and observe their experiences from many perspectives.

Q5: After using it, did you think it was a good tool?

Q6: Did leadership provide you with support in learning the new application? If so, how?

Q7: Do you think you should have received more support from leadership and resources during the start of the pandemic and until now? If so, how and what?

<u>Active Experimentation</u>: the learner must use these theories to make decisions to solve problems.

Q8: Describe what you learned and experienced and how it changed your opinions on technology.

Q9: How can you use your experiences and apply what you have learned in the future?

Appendix C: IRB Approval Letter

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

May 17, 2021

Mary Ferguson
Department of Graduate and Professional Studies\
Abilene Christian University

Dear Mary,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Transformational Leadership and Information and Communication Technologies (ICTs): A Case Study of Primary Teachers at an Urban School in Bogotá Colombia",

was approved by expedited review (Category 6 & 7) on 5/17/2021 (IRB # 21-055). Upon completion of this study, please submit the Inactivation Request Form within 30 days of study completion.

If you wish to make any changes to this study, including but not limited to changes in study personnel, number of participants recruited, changes to the consent form or process, and/or changes in overall methodology, please complete the Study Amendment Request Form.

If any problems develop with the study, including any unanticipated events that may change the risk profile of your study or if there were any unapproved changes in your protocol, please inform the Office of Research and Sponsored Programs and the IRB promptly using the Unanticipated Events/Noncompliance Form.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs

Appendix D: School Leadership Interview Questions

Questions for Interviews with School Leadership

Research Question 3: What role does transformational leadership play in the availability of

resources and support of classroom technology implementation?

Individualized Consideration (TL component)

Q1: Are ICTs included in the vision or mission statement of your school?

Q2: How do you support teachers as they engage students through ICTs?

Q3: What did you do to help with the problems your teachers face with ICTs?

Q4: Describe to me your experiences with ICTs. (How did that make you feel?—follow up
question if needed).

Q5: Have you received training on the required ICT tools that you have to use? If so, has it been
helpful?

Q6: Is professional development provided to your teachers? If so, how many times a year? Is the
training on technology in general, or is it on specific or required applications that they have to
use in their instruction? Please explain.

Q7: With the impact of the pandemic, describe to me your experience of quickly switching from
in-person instruction to virtual learning.

Q8: What challenges have surfaced from your teachers teaching virtually?

Q9: Have you assisted your teachers with the challenges of teaching virtually? If so, how?

Q10: How do you help your teachers grow through personal and professional challenges?

Q11: Have your beliefs or opinions toward ICTs changed since you first began your position
until now? If your beliefs or opinions have changed, how so?

Intellectual Stimulation (TL component)

Q12: How do you model and promote ICT usage for your teachers?

Q13: Do you see your teachers using their creative ability to solve problems they may encounter
with technology? If so, can you give an example?

Inspirational Motivation (TL component)

Q14: Have you encountered challenges in motivating teachers? If so, how?

Q15: In what ways do you develop awareness for the vision and mission of your school?

Q16: In what ways do you think your personality or the way you role model motivates teachers to adapt or go beyond the school's goals?

Idealized Influence (TL component)

Q17: Do you think your leadership style influences your teachers? If so, how?

Q18: How do your teachers show that they respect and trust you? Please provide examples.