THE EFFECT OF LEARNER PROFILING ON FOURTH GRADE ENGLISH STUDENTS' PIRLS ACHIEVEMENT SCORES OF STUDENTS WHOSE TEACHERS ARE CREDENTIALED OR NON-CREDENTIALED

by

Raynor Stuart Roberts Jr.

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University

2022

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ABSTRACT

As the world enters the knowledge-based economy, schools across the globe look to teach up so students can become lifelong learners. Educators focus on implementing instructional best practices that will promote increased student achievement. The current study aims to determine if a significant interaction exists between teacher credentialing and the pedagogical act of learner profiling that would affect student Progress in International Reading Literacy Study (PIRLS) achievement scores. PIRLS is a recognized reading assessment proctored to over sixty-one countries that measures and benchmarks fourth-grade students' reading achievement. The researcher deployed a quantitative, quasi-experimental nonequivalent control-group study to observe four groups of Saudi Arabian fourth-grade international school teachers and students. Each group represented all possible configurations of the two factors, including licensed teachers who learner profiles, licensed teachers who do not learner profile, non-licensed teachers who learner profile, and non-licensed teachers who do not learner profile. After all teacher groups administered a PIRLS pre-test, teachers who were identified as consistently learner profiling received a four-week treatment that provided an in-depth insight into learner profiling benefits and best practices. A two-way ANOVA was run to determine if an interaction between teacher credentialing and learner profiling existed in regards to student achievement. The test determined that there was no significant interaction between the two independent variables. However, two independent samples *t* tests revealed that licensed and learner profiling outperformed teachers who were not licensed or teachers who did not learner profile. These findings confirm the most recent literature regarding the importance of highly qualified teachers and sound pedagogical practices. Future research may include using an alternative measurement more reflective of Saudi student achievement and determining the role teacher experience has on instructional effectiveness.

Keywords: teacher credentials, learner profiling, highly qualified, student achievement, international schools, teacher preparation, fourth-grade, Saudi Arabia, differentiation, pretest, posttest

Copyright Page (Optional)

Dedication (Optional)

If it were not for God's grace and mercy, a wretched soul like me would not deserve this opportunity. All praises and glory to our heavenly father, for nothing is possible without his omniscient design.

To my mother, although you have long passed, I know you are continuously petitioning God to grant me reprieve after reprieve after reprieve. Your example of hard work is the cornerstone of my ability to continue getting up and fighting regardless of the times I fell, tripping over my feet. I hope you are satisfied with the person I have become.

To Steven Young, my first hero, first teacher, first friend, first battle buddy, father, advocate, coach, chef, and advisor, this win is your win because God gave you one assignment to nurture me. I know you are with Ma taking the blame for all my transgressions. I am a product of your dedication to me. I had the best dad a young man could ever hope for. You taught me that imperfection does not mean failure, and nothing replaces integrity and honor.

To my children, Ray and Phoenix, I hope you read this long after my time has passed and understand I only did this for the both of you. I am only serving as the pathfinder, so it can be slightly more manageable for you to find your way. The journey does not mean obtaining terminal degrees. The journey is continuing the path that I have started for your children, family, and community. Please strive to leave this world than when you received it. Daddy will always love you. Daddy will never leave you. Daddy will always be with you, even when I am called to my next assignment. You are never alone!

Acknowledgments (Optional)

I would like to take this chance to thank my committee, Dr. Hutter, Dr. Barthlow, and Dr. Brom, for your support and attention as I went through this doctoral journey. A special thank you to Dr. Barthlow for agreeing to serve on this committee even though you were stretched, taking my impromptu requests to speak, and making me feel like a colleague instead of a student.

I have to give a grateful moment of appreciation to all the participants of this study who spent four weeks with me when you had your plates full. I appreciate your efforts. Also, I must thank the administrators, school leaders, and ownership for permitting me to conduct my study at your sites. You could have said no, given all the demands and transitions regarding COVID and the new tri-semester year. Thank you all!

I must acknowledge the country of Saudi Arabia for allowing me, the American, to co-exist in the magical Kingdom. I am sure that I would not have pursued this degree if it were not for the scores of Saudis who have called me doctor over the years, speaking this accomplishment into existence. When you receive awards engraved Dr. Roberts, you *kinda* have to get the degree.

It would be ungrateful not to acknowledge Dave Hopkins my mentor. Many thank yous for taking me under your wing. You have been my Yoda. I hope this work reads as an apparent product of your mentorship. My pedagogy derives from the School of Dave Hopkins.

I would like to give credit to the unsung heroes and sheroes of my life. Thank you, Daniel and Illy O' Brien, Christopher and Patricia Lambert, and George and Alisa Davis, for your support over the years. I have eaten your food, dirtied your dishes, and caused pre-mature balding. I have never taken what you have done for me for granted.

Finally, to my America. Thank you for truly being the land of opportunity and building the grit required for success and integrity.

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List of Abbreviations

Analysis of covariance (ANCOVA)

Analysis of variance (ANOVA)

Common European Framework of Reference for Languages (CEFRL)

Kingdom of Saudi Arabia (KSA)

Learner profiling (LP)

Ministry of Education (MoE)

Programme for International Student Assessment (PISA)

Progress in International Reading Literacy Study (PIRLS)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this quantitative, quasi-experimental nonequivalent control-group study is to determine if credentialed teachers who engage in consistent learner profiling have a more substantial impact on student achievement than teachers who do not learner profile regardless of their credentials. Chapter One includes essential background information that explains the importance of learning profiling within instructional methodology. This chapter includes the theoretical frameworks that support the concept of learner profiling, and it identifies recent literature that guides the problem statement's scope. The author thoroughly explains the study's purpose, presenting the significance of this research on the literature and teaching and learning. The chapter concludes by presenting the research questions and providing definitions relevant to the understanding of this study.

Background

Teachers' ability to make critical judgments about students and their instructional needs rely on their training, perception, ability, and willingness to collect and aggregate all data types (Zoch, 2017). As developed nations shift from service-based to learning-based economies, the need for problem solvers and a self-regulated labor force is critical to meet the requirements of zero-marginal cost societies (Rifkin, 2014). Unfortunately, many schools worldwide are not meeting the academic standards necessary to prepare upcoming generations for the burden of leadership. The current research points directly to student-centered learning, emphasizing differentiation and personalization as the instructional approaches to nurture students to a mindset of life-learning (Kaput, 2018). Through learner profiling, teachers can make data-driven decisions about students' wants, needs, and expectations to develop opportunities for teaching and learning affordances (Anderson, 2015). Learning profiling is the act of teachers collecting

various types of student information to understand a student's background, individual learning experiences, learning preferences, learning aptitude, learning habits, and motivational factors such as goals and aspirations (Manganello et al., 2013). The learner profile is an essential component in educational constructs such as personalization, differentiation, and adaptive learning (Manganello et al., 2013; Premlatha et al., 2016; Tomlinson, 2017).

The needs assessment is the basis on which educators plan and execute curriculum (Romiszowski, 2016). Educators often use data derived from needs assessment as evidence for particular student grouping or tracking (Bradbury, 2018). Educators analyze and judge students' backgrounds, abilities, and motivations from these assessments, forming students' profiles (Südkamp et al., 2018). However, student profiles are not static, as learners' wants, needs, and expectations are subject to constant change (Lazarides et al., 2018). The interrelationship between the needs assessment, the student profile, cultural awareness, and student-centered learning offers affordances illuminating the value of learning profiling as a compulsory teacher act.

Moreover, the student profile is more about student perception and attitude than high-stakes assessment results (Lin et al., 2019). Collecting student data on student perception and attitudes enable educators to become culturally aware of their learning environments (Mahatmya et al., 2016). When teachers integrate cultural awareness based on the student profile, they can facilitate student learning by offering instruction that allows students to construct knowledge and identify the pathways to acquiring knowledge (Garzon-Diaz, 2021). As a result, the learner profile catalyzes the execution of student-centered learning. Student-centered instruction hinges on the act of collecting student data via formative assessment so the teacher can alter instruction delivery to meet learner needs and promote student achievement (Connell et al., 2017)

Most developing and developed countries spend a considerable percentage of their gross domestic product educating their citizens. America spends over half a trillion dollars annually on education, averaging just over 12,000 dollars per pupil (EducationData, 2021; US Department of Education, 2021a). Countries' prosperity and defense are directly connected to their people's teacher-student ratio and literacy rates (Budsaratragoon & Jitmaneeroj, 2021). The United States Department of Education explicitly includes global competitiveness in its mission statement as the core reason for its function (US Department of Education, 2021b). Government education leaders are experimenting with methods that will accelerate the learning schedule so the education sector can consistently replenish the labor force to meet the various demands of the second half of the twenty-first century. For example, Saudi Arabia's Ministry of Higher Education recently instructed its universities to develop strategic plans that short their academic calendars from two to three semesters an academic year (Saudi Arabia Ministry of Education, 2021). This move will allow students to graduate from college earlier, which means Saudi citizens will enter the workforce quicker. A move like this would mean less reliance on educated foreign workers and decreased Saudi unemployment (Alshuwaikhat & Mohammed, 2017).

Unfortunately, high expectations from the government and business sectors mean higher standards, which inevitably means more high-stakes testing and an increased burden on educators (Gonzalez et al., 2017). Student performance has been lagging in most nations for decades, while innovation has created a need for a workforce of advanced critical thinkers and problem solvers (Longmore et al., 2018). Both secondary schools and higher education have produced graduates who lack adaptability, self-regulation, and critical thinking, which has caused critical soft skill gaps in the labor force (Jackson et al., 2016; Levesque-Bristol et al., 2019). Schools worldwide continue to suffer from the inert knowledge problem as many existing instructional methods do not yield significant opportunities for learning transfer (Snoddy &

Kurtz, 2020). Evidence of these gaps exists in many countries' low PISA scores (Schleicher, 2019). These scores imply a critical problem in the instructional methods many schools implement in classrooms worldwide. This lack of student performance also explains why employers demand that academia prepare learners for current and future work sector needs (van der Horst & Klehe, 2019).

Intentional and consistent learner profiling allows teachers to identify learners' prior knowledge, interest, and preference, enhancing opportunities for effective learning (Stevenson & Reed, 2017). To illuminate the value of learning profiling, it is essential to highlight the difference between effective instruction and effective learning. Effective instruction implies that teachers present students with clear, concise, coherent, positive, and attainable commands (O'Handley et al., 2021). However, effective learning focuses on learners accessing and experiencing various levels of higher-ordered thinking commonly measured using Bloom's taxonomy (Tang & Chaw, 2016). Research indicates that being a good teacher is often not enough to determine effective learning (Kalendar, 2017). However, teachers who engage student interest and identify student needs are most likely to facilitate student achievement and higher-ordered thinking even if they may not use the best instructional practices (Kalendar, 2017). Learner profiling allows teachers to engage in supplantation, enabling differentiation and personalization of instruction (Baukal & Ashburn, 2017). Research suggests that supplantation is an effective intervention to help students conceptualize complex ideas through static or dynamic representations such as graphs and animations (Vogel et al., 2007; Zumbach & Reisenhofer, 2012). In order to offer instructional interventions such as supplantation, teachers must understand learners' "cognitive style" to determine how to support learning acquisition based on the instructional challenge presented (Ashburn & Ashburn, 1978, p. 337). When teachers commit to learner profiling, they will understand that students have different cognitive styles and

concepts such as differentiation, needs assessment and student tracking become compulsory practices to support effective learning (Neve & Devos, 2016). More importantly, teachers will understand the need to work collaboratively with peers to respond appropriately to intervention, as concepts like differentiation may be difficult to implement given teachers' limited instructional time (Lopuch, 2018).

Learner profiling enables teachers to identify commonalities between the learners in their classrooms. Although differentiation and mixed ability learning environments are desirable learning approaches to support individual learning preferences and students' cognitive abilities, it is often not practical in time-sensitive environments such as a formal K−12 classroom (de Jager, 2017; Willingham & Daniel, 2012). The popularity of differentiation and mixed ability assignments seem to be driven by a sense of social justice rather than learning acquisition or teacher effectiveness (Carmel & Ben-Shahar, 2018; Francis et al., 2017). Most instructional strategies are derived from finding the commonality between learners' profiles in contexts such as teaching mathematics through learning trajectories-based instruction (Huang et al., 2019; Sztajn et al., 2012). The long-held practice of ability grouping is predicated on the instructional belief that teachers can provide effective instruction when students of similar profiles are grouped together to provide homogeneity in teaching and learning interactions (Steenbergen-Hu et al., 2016). However, research that shuns ability grouping fails (Francis et al., 2017) to acknowledge research on nurture groups that yield positive gains (Cubeddu & MacKay, 2017).

More importantly, teachers must use the learner profile to assess students' perceptions and attitudes regarding their learning. Positive student perception regarding instruction has promoted student achievement and motivation (Chiu & Cheng, 2017). The prolific Earl Stevic believed that effective student learning had little to do with what teachers do and more with what occurs "inside" and "between" learners (Kryszewska, 2015, p. 97). Because learner attitudes

change over time, teachers must consistently be in the habit of surveying students' wants, needs, and expectations to ensure the instructional interactions are authentic and relevant. Learner profiling sets the stage for advanced teacher acts such as teacher noticing, allowing teachers to engage students with higher-ordered discussions (Cowie et al., 2018). Teachers begin to focus more on engaging learners versus concentrating on content (Bonem et al., 2020). Knowing and gauging students' general dispositions through profiling allows teachers to determine when students are prepared to engage in more profound and more rigorous instruction (Powell & Ochan-Powell, 2011).

Learner profiling is the foundation that provides data for educators to help learners become self-regulated and self-determined contributors to society. Active learner profiles allow teachers to begin building student-centered instruction and promote higher-ordered thinking (Yang & Kortecamp, 2021). Also, the factor of personal and cultural differences can be accounted for through dynamic profiling, mainly when learners of similar profiles are grouped together (Tang, 2021). Providing instruction that nurtures learners' ability to self-regulate will ultimately produce individuals who will meet the demands of the learning economy (Ng, 2019). In the learning economy, data is used to inform decisions about productivity, equity, and satisfaction measured based on personal expectations and not centralized mandates (Gush & Smith, 2019). Teachers' use of learner profiling will prepare learners for a world where self-sufficiency, creativity, and individuality will be assets promoted through the concept of the blockchain (Lam & Dongol, 2020). The foundation of teaching and learning must be based on the principles of needs analysis to implement student-centered-learning instruction (Johari et al., 2005; MacAlister, 2012).

Mann, Dewey, Vygotsky, and Kolb offered the construct of needs analysis as they propelled the ideas of constructivist pedagogy (Clapper, 2010). Needs analysis in academia

officially became a recognized practice in 1960 American schools to increase academic standards and accountability (Stufflebeam et al., 1985). Needs analysis is the process of teachers collecting learning information to create instruction plans (Stufflebeam et al., 1985). In the non-profit sector, needs analysis has been used as a vital instrument to determine whether training solutions could meet a target population's needs during the request for proposal process (Pratt, 1980). The business sector has used needs analysis to collect critical data to determine training needs and understand performance gaps (Clarke, 2003).

Needs analysis has also been associated with an objective behavioral movement in academia that called for essential goals to be written in measurable form (Richards, 2001). Precision and accountability were the movement's fundamental motives, influencing educational technology and educational technology methodologies (Richards, 2001). Needs analysis is one of the primary components of English language programs, such as TESOL, CELTA, and Trinity. Globally, language teaching is a substantial business line that embraces a needs-based approach to engage learners (Bagshaw & Brindley, 1984). Needs analysis provides the data that helps educators create effective learner profiles (Linse, 1993).

Recent academic research has referred to learner profile created data-driven opportunities as moments that identify affordances (Ahn et al., 2016; Anderson, 2015). Affordances are the conditions that most likely will facilitate an optimal learning transaction (Jiang, 2017). It is essential for teachers to learner profile to identify the affordances that will promote student performance in a given context (Kreniske, 2017). Affordances can derive from motivations, social interactions, and structured activities in a learning environment (Fjellstrom & Kristmansson, 2016). Teachers who fail to learner profile may be missing opportunities to make learning efficient for individual learners (Oliver, 2015; Premlatha et al., 2016).

A change in how schools and government agencies view teaching methodology to produce self-regulated, self-determined, and self-efficacious learners must start with teacher-student engagement within learning spaces. Most of the recent literature is clear that instruction must focus on the students. Teachers must not only apply best practices that provide opportunities for differentiation, personalization, and intervention (Reigeluth et al., 2017), but they must also reduce their teacher talk allowing students to *do* through controlled practice, problem-based, and task-based learning (Anazifa & Djukri, 2017; Hopkins, 2011; Sagita, 2018). However, schools are slow and often hesitate to shift toward student-centered learning methods as many countries suffer teacher shortages and high teacher attrition (Garcia & Weiss, 2019a). In a second report concerning this issue, Garcia and Weiss (2019b) revealed that teachers' high turnover forced many American schools to hire provisional teachers and teachers who receive on-the-job training through alternative teaching programs. The problem of inexperienced, uncredentialed, and unavailable qualified teachers is of global concern as UNESCO suggest that there is currently a global teacher shortage of 70 million (Ingersoll et al., 2018). This teacher shortage epidemic most likely means that novice teachers rely on teacher-based instructional methods that they experienced to engage learners (Kumaravadivelu, 2003). The literature informs us that teacher-based instruction does not significantly support critical thinking, problem-solving, or learning transfer (Al-Najar et al., 2019; Boardman et al., 2017; Pale, 2016).

Moreover, teacher perceptions about implementing student-centered strategies suggest a gap between the literature and actual instruction (Mugangu & Ssenkusu, 2019). Many teachers seem to negatively view student-centered learning (Thamraska, 2003; Trinidad, 2020). Middle school and high school teachers are less likely to use these student-focused strategies (Arseven et al., 2016; Keiler, 2018; Levesque-Bristol et al., 2019). Many teachers who communicate their recognition of the value of student-centered learning do not implement the strategies in their

instruction learning (Sabeh & Du, 2018). Although teacher-based instruction has value in particular learning contexts (Krahenbuhl, 2016), the shift toward student-centered methods will better prepare learners for the challenges of the second half of the twenty-first century (Lee & Hannafin, 2016).

A successful move toward student-centered learning must be grounded in sound teacher training and continuous professional development (Ally, 2019). For nations to meet global demands, they must inspire teachers to engage students in a way that promotes life-long learning (Szeto & Cheng, 2018). To implement effective student-centered learning, teachers must understand and practice constructivist approaches in environments that offer mentorship, resources, structured feedback, and support (Harfitt & Chan, 2017). As a result of proper teacher training and ongoing professional development, teachers can implement the best practices such as learner profiling to understand students' wants, needs, and expectations (Farrell & Marsh, 2016; Kaput, 2018). A learner profile can include various types of information that give everyone interested in a student's academic achievement data that can be used to support that learner's academic performance (Willaby, 2018). Teachers who actively learner profile essentially create opportunities to make their instructional efforts effective (Oliver, 2015; Poole, 2017). Ultimately, the primary purpose of learner profiling is for teachers to make data-driven decisions throughout the learner calendar so that students can demonstrate intended learning outcomes (Inguva et al., 2019; Oliver, 2015; Park & Datnow, 2017).

Problem Statement

Depending on the context, topic, outcomes, or instructional domain, teacher-based or student-centered learning can be effective instructional forms (Lak et al., 2017). Learner profiles can provide teachers with critical information about students' wants, needs, and expectations (Martínez & Porter, 2020). Tomlinson et al. (2003) explain the nature of academically diverse

classrooms, and the review acknowledges teachers' awareness of the demands of such learning environments. However, many teachers often do little to adjust their teaching methods to create affordances within the learning transaction (Tomlinson et al., 2003). These teachers are likely experiencing cognitive dissonance that could be nurtured and developed through professional development and mentorship (Wall, 2018). Although the literature firmly addresses the concept of differentiation, personalizing instruction, and executing data-driven decisions, learner profiling is rarely considered as a critical teacher responsibility or instructional method. However, teachers' failure to learner profile decreases their opportunities to decide about context, appropriate language, assessments, learners' prior knowledge, achievement, experiences, social economics, ability, attributes, sensitivities, and motivations (Synman & van der Berg, 2018). Students' ability to experience learning transfer wanes when teachers are not learner profiling, and opportunities for differentiation and personalization are also not possible (Pugh et al., 2017).

An exploration of the literature will yield abundant results concerning learning profiles in adaptive, machine, computerized, and digital learning scenarios, but the topic of learner profiles in traditional direct face-to-face instruction is lacking. More interesting is that much of the research is dedicated to identifying specific learner profiles or ability groupings for a target population of learners to make predictions or assumptions about future success (Park & Datnow, 2017; Rogiers et al., 2020). This research ignores the reality that teachers use learner profiles to identify how learners may approach learning (Tomlinson, 2017; Tomlinson et al., 2003). Learner profiles are also used as models that indicate students' ideal characteristics, such as in the case of the International Baccalaureate program Learner Profile (Rizvi et al., 2020; Sovis & Pancost, 2017). However, learner profiling as an act is not addressed in the literature in any depth, including quantitative research examining the connection between human learning profiling and

student achievement. A plethora of research supports the importance of learning profiling in educational technology (Jang et al., 2017; Park et al., 2015; Premlatha et al., 2016). The same support for teaching profiling is rarely found in the literature as a primary topic of discussion, although it is connected to differentiated instruction. The problem is that there is a gap in the literature that fails to explore learner profiling as an instructional method that supports student achievement.

Watson et al. (2017) note that gaps in the literature exist regarding profiling for students' perceptions and attitudes during instruction. These student perceptions are essential to student achievement and performance and lay the foundation for teachers' instructional methods to provide students with opportunities to acquire and transfer knowledge (Watson et al., 2017). The learning economy has begun to usher in educational data mining and learning analytics, but a lack of research on the affordances of access to such information has caused a gap in the literature (Aldowah et al., 2019). Studies indicate that as learners advance through the K−12 grades, teachers become less attuned to their students' perceptions and attitudes (Marucci et al., 2018). Therefore, opportunities for teachers to customize and alter instruction naturally decrease as students progress. Teachers' ability to notice and insert appropriate language through modeling based on students' perceptions creates environments to promote student achievement (Hendrickx et al., 2017). Hendrickx et al. (2017) explain that further research needs to be conducted to study the causality between teacher behavior and student perception. Further research must be conducted to understand how teachers create effective interventions based on teacher attunement supporting positive learner attitude and student achievement (Cubeddu & MacKay, 2017).

Purpose Statement

The purpose of this quantitative study is to determine whether there is a relationship between intended learner profiling and student achievement. This research will provide better insight into whether learner profiling effectively uses teachers' time, impacting teachers' perception of learning profiling and comprehensive student-centered instruction. The author will conduct a quasi-experimental nonequivalent control-group study that seeks to examine two independent variables: teachers' credential status and their use of learning profiling with fidelity or not. Credentialed teachers are educators who have possess the appropriate teaching license for the subject area they instruct based on the requirements set by the licensing authority for the country or region they teach (National Council on Teacher Quality, 2021). These teachers tend to have majored in education-related courses in their undergraduate studies and met the required qualifications before receiving the Bachelor's degree (Redding & Smith, 2016). However, some countries and regions allow non-credentialed teachers to teach while engaging in alternative or accelerated teaching programs (Whitford et al., 2018). For this study, teachers whom their home countries' licensing authority has licensed will be categorized as credentialed. Teachers who are currently participating in alternative licensing programs received waivers to teach from the Saudi Arabia Ministry of Education based on their degree or nationality or just employed in a Saudi international school will be labeled as non-credentialed teachers.

The researcher will label teachers into four groups based on their credential status and engagement in learner profiling. The second independent variable will observe whether the teachers actively engage in learner profiling regardless of credentials. A teacher who learner profiles actively and consistently measure students' perception, attitudes, and needs throughout the learning process to make instructional adjustments that enhance student achievement (Barak, 2017; Kevan & Ryan, 2016).

This research dependent variable will be Progress in International Reading Literacy Study (PIRLS) reading scores taken from a sample PIRLS test. PIRLS is an international test that measures fourth-grade literacy, specifically in reading for a purpose and reading comprehension (Mullis & Martin, 2019). Many countries measure fourth-grade literacy to determine elementary teaching effectiveness and assess future educational and societal needs (Little & Hart, 2016).

Target participants will be fourth-grade English teachers from four different international schools in Riyadh, Saudi Arabia. These teachers will instruct learners on the reading domains covered in the PIRLS assessment during the academic year. The participating schools offer American or British-focused curriculums in a gender-specific learner environment starting from the third grade (Alasmari, 2020). Because Saudi Arabia has a substantial ex-pat community, the nationalities of the participating teachers and tested students will vary.

Fourth-grade English students will also be participants in this study. These students represent several nationalities ranging from various regions, including the Middle East, Southern Africa, Northern Africa, Southern Asia, Western and Eastern Europe, Southeast Asia, and North America. Fourth graders in Saudi international schools usually are ten years of age. These students tend to be transient learners due to the temporary nature of their parents' careers. Although many Saudi schools participate in the PIRLS testing, international schools are not required to conduct this assessment. It is important to note that Saudi Arabia has traditionally underperformed on the PIRLS assessment (Schleicher, 2019).

Significance of the Study

The findings of this study concerning learner profiling support the existing literature by offering insight into teachers' responsibilities related to scaffolding, differentiating instruction, personalizing instruction, and providing interventions for learners. In an era of machine learning that enhances adaptive digital learning opportunities, teachers' responsibilities may begin to

wane as technology's role becomes an essential aspect of student-centered learning (Selwyn et al., 2016). Individual and collective teacher efficacy regarding technology integration, online learning, and supporting learners' ever-changing nature are paramount in providing effective instruction (Donohoo, 2017; Hampton & Keys, 2017). Learner profiling can be an essential method to promote teacher self-reflection and group decisions that support continuous improvement and overall confidence (Jackson et al., 2013). This study could inspire readers to conduct further research exploring the topic of learner profiling as an act that provides data for teachers to make informed instructional decisions (Kurilovas, 2020).

This research continues the discovery path in Südkamp et al.'s (2018) research concerning teaching judgment and student profiles. The work ventures into what Carol Ann Tomlinson refers to as the "messy" realm of learner profiling (Oliver, 2015). Teachers' ability to make instructional decisions about student achievement and performance can be marginally accurate in specific contexts and inaccurate in others (Südkamp et al., 2018). This research attempts to clean up the mess by defining and offering an efficient learner profiling model as an instructional act. Also, this work intends to clear up the ambiguous nature of the learning profiles (Mohamed et al., 2017) in traditional direct instruction and blended learning environments. The connection between this study and existing work on teacher judgment based on profiles is linked to the dependent variables of student achievement or performance (Gabriele et al., 2016; Machts et al., 2016; Südkamp et al., 2018). However, this has broader implications about intuitiveness and thoughtfulness, which provides insight into best practices for differentiating, personalization, and overall student-centered instruction (Vanlommel et al., 2018). This study may also add value to the paucity of research regarding upper elementary response-to-invention efforts in reading (Wanzek et al., 2016). Finally, it is critical to note that this study can impact students of all levels

and educators at various stages in the professions, including pre-service, in-service, para-educators, and administrators (Vanlommel & Schildkamp, 2019).

Research Question

RQ1: Is there a difference in PIRLS achievement scores of students whose teachers are credentialed or non-credentialed and those who implement learning profiling with fidelity or who do not implement learning profiling?

Definitions

1. *ability grouping* - Ability grouping occurs when schools assign students into specific learning groups or classes based on prior knowledge and ability (Steenbergen-Hu et al., 2016).

2. *affordances* - Affordances are contextual opportunities that enhance a person's ability to acquire knowledge or experience transfer based on one's past experiences, values, beliefs, skills, and perceptions (Perez-Paredes et al., 2019).

3. *credentialed teacher* - An educator who has met a sanctioned education board or agency's minimum requirements to teach specific subjects to learners in a formal learning environment (National Council on Teacher Quality, 2021).

4. *data-driven decision* - Educators make data-driven decisions when they collect various information about students to make evidence-based decisions about instructional practices (Dunn et al., 2019).

5. *learner profiling* - Learning profiling is the act of continuously collecting a wide array of data about an individual learner to develop instructional opportunities (Park et al., 2015).

6. *needs analysis* - Needs analysis is the process of teachers collecting learning information about students to create instruction plans (Stufflebeam et al., 1985).

7. *student achievement* - In the context of formal learning, student achievement is accomplished when a learner meets defined learning goals through an assessment instrument based on recognized standards (Hattie & Anderman, 2020).

8. *teacher attunement* - Teacher attunement is the ability of teachers to accurately know and gauge their students' attitudes, characteristics, and social dynamics (Marucci et al., 2018).

9. *teacher noticing* - Teacher noticing is teachers' ability to identify and appropriately respond to opportunities during an instructional transaction to develop students' thinking, interests, and needs (Cowie et al., 2018).

10. *teacher judgment* - Teacher judgments are predictions that educators make about students based on student performance, demographics, attributes, or teacher perceptions and intuitions (Machts et al., 2016).

11. *supplantation* - Supplantation is a media-based instructional intervention or input that assists learners in processing and conceptualizing complex ideas by introducing external representations such as graphs or animations. The teacher must base the external representations based on the learner's prior knowledge (Vogel et al., 2007; Zumbach & Reisenhofer, 2012).

CHAPTER TWO: LITERATURE REVIEW

Overview

This literature review aims to demonstrate the importance of learning profiling as an essential instructional act that promotes data-driven decisions, teacher reflection, and student-centered learning, leading to enhanced student achievement and lifelong learning mindsets. The chapter begins with theoretical frameworks based on Vygotsky's social development theory that purports higher mental functions are nurtured through relationships of a knowledgeable person allowing for meaningful practice, self-regulation, and learning transfer (Smolucha & Smolucha, 2021). Kolb and Frye's (1975) experiential learning theory moves beyond Vygotsky's focus on child development and considers the many perspectives learners need to acquire knowledge and experience transfer. This literature review also includes student-centered learning as a framework requiring instructional profiling to develop instructional essentials for project and problem-based, blended, online, and virtual learning practices. The related literature demonstrates the value of learning profiling for student academic and personal achievement while highlighting the affordances learning profiling offers teachers willing to collect various types of student data.

Theoretical Framework

There is much literature and intellectual depth regarding the importance of learning profiling to aid the phenomenon of learning transfer and learning independence. From the Enlightenment to the Post-postmodernity, the individual has evolved to complete independence and self-sufficiency (Kant, 1798). Thinkers such as Jean-Jacques Rousseau proclaimed that governments' efficiency would be reliant on individuals' collective reasoning. The movement toward an end of social distinctions through Froebel's pedagogical belief that learning occurred relative to one's ability to explore problems in a self-referential way (Ahmegotlu & Gokcen, 2018). Kolb and Frye's (1975) work on experiential learning identifies a learning cycle that

informs educators how to guide learners through meaningful contextual experiences while also identifying the function of learner profile for instructional planning. This self-referential pedagogy will be the underpinnings of John Dewey's constructivism and Vygotsky's social constructivism, which eventually led us to our current state of project and tasked based learning managed through the lens of student-centered learning.

Social Constructivism

For teachers to learner profile, they must possess a belief that learning is a social transaction and teaching requires the creation of authentic peer-to-peer interactions (Streule & Craig, 2016). Vygotsky proposed that learners learn when knowledgeable peers are available during learning opportunities to assist learners (Vygotsky, 1978). It is important to note that the knowledgeable peer does not necessarily need to be the teacher. Any person within a learner's field of observation may provide the appropriate support that promotes that acceptance of knowledge. In fact, during practice iterations, peer teacher learning enhances knowledge acquisition through the collaboration of feedback, reflection, motivation, and prior knowledge (Thurlings & Brok, 2018). Students begin to acquire and utilize knowledge for higher-ordered purposes when collaborating, observing, questioning, and negotiating their learning with others (MacLeod et al., 2018).

Learner profiling is a prerequisite for effective planning and instruction to enlist influential peers who possess the skill sets to assist students' knowledge acquisition and development (Bruen, 2001). Learner profiling allows teachers to implement the most effective and appropriate instructional and interventional strategies because data concerning student needs are continuous compared with student outcomes (Bruen, 2001). The teacher who implements and maintains profiles as a data collection strategy will begin to make data-driven decisions that prepare learners for meaningful interaction with their peers and other variables apart from their

living reality (Kevan & Ryan, 2016). In essence, learning profiling becomes the cornerstone of instruction in terms of the teacher deciding how to create opportunities for students to build knowledge collaboratively (Barak, 2017). Unfortunately, teacher training and the teacher's pre-servicing still focus on teacher-based instruction that places insufficient emphasis on the learners constructing knowledge through collaborative problem-solving (Ceroni et al., 2016).

Knowledgeable Tutor and the Zone of Proximal Development

Looking through the lens of social constructivism compels educators to redefine and limit their roles in the classroom as the sage who wears many hats to a facilitator, performance evaluator, and advisor that holds learners responsible for their learning (Konings et al., 2014; Reigeluth et al., 2017). When teachers begin to see instruction as opportunities for students to demonstrate what they can do (Hopkins, 2011), they will begin to change their perception of what they need to do in learning environments to support student practice and exploration (Fife, 2013). This exploration cannot effectively occur if the teacher does not know enough about students' wants, needs, and expectations. The only way to acquire this information is through teachers' profiling efforts that map each learners' progress relative to their needs (Reigeluth et al., 2017; Smagorinsky, 2007). Once the teacher becomes knowledgeable about students' needs and capabilities, they can manage learning logistics guiding the student experience through the zone of proximal development (ZPD) (Vygotsky, 1978). The zone of proximal development is the "distance" between students' developmental levels and ends at the point of their developmental potential (Vygotsky, 1978, p. 86). As stated, the knowledgeable peer is not exclusively the teacher or fellow student, but this peer can be anyone who connects and creates a context through the correct "speech genre" representing the society norms learners understand (Smagorinsky, 2007, p. 62).

Experiential Learning Theory

Vygotsky's ZPD focused primarily on creating collaborative experiences with knowledgeable tutors to help learners gain knowledge and skills relative to their developmental potential (Barak, 2017; Vygotsky, 1978). Teachers must know learners' prior knowledge, cognitive experiences, and various needs to usher them to their potential (Witherby & Carpenter, 2021). As educators move from teacher-based learning to supporting learning through facilitation, the learner profile will help teachers make decisions about the types of turbulence learners need to experience to construct meaningful experiences through the learning cycle. Kolb and Frye's (1975) work on experiential learning provides instructional assets concerning how people learn, unlike Vygotsky, who primarily focused on child development. This theory also supports schools providing opportunities in the curriculum that allow students to actively experiment with a problem or situation from various contexts and perspectives (Chiu, 2019). Experiential learning theory divides the learning cycle into four parts that work in session with one another: concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb & Frye, 1975).

Recent studies have demonstrated that Kolb's cycle provides theoretical support for professional learning situations (Fewster-Thuente & Batteson, 2018; Konak et al., 2014; Sternquist et al., 2018). First, teachers must provide authentic concrete experiences that students can experience, observe and contextualize (Kolb & Frye, 1975). The teacher then evaluates student performance creating digestible feedback that students can consume and reflect (Kolb & Frye, 1975). The learners can contemplate, question, and object to the teacher's feedback to create theories and solutions to a new problem that the teacher will pose (Kolb & Frye, 1975). Experimental learning is a constructivist theory as the key function of the teacher is to facilitate and evaluate while the student's function is to observe, process, explore, test, and determine new

learning and solutions to problems (Dennick, 2016; Kolb & Frye, 1975; Kolb et al., 2001). Students will actively test their findings, theories, or new knowledge to conceptualize (Kolb & Frye, 1975). Finally, it is essential to note that this cycle is not linear but a "recursive circle" that requires teachers to continuously provide iterative inputs that students can "bank" and refer to at later times for synthesizing (Kolb & Kolb, 2018).

Kolb acknowledges the importance of learner profiling to the experience of learning. The learning cycle establishes four distinct learner profiles. These profiles address the strengths and weaknesses of the converger, diverger, assimilator, and accommodator (Kolb & Frye, 1975). Profiles allow teachers to use current data to identify and create the best concrete experiences and authentic problems to conceptualize (Kolb & Frye, 1975). When learners engage real-world problems relative to their experience and teachers guide them, the process of learning transfer is likely to occur (James, 2008). Furthermore, learner profiles provide the teacher with current data that allows the teacher to create experiences that build trust, identity, and teacher-student connections that prepare for the tension that will occur throughout the learning process (Kolb & Frye, 1975; Ward et al., 2011).

Student-Centered Learning

Over the past decade, academia has increasingly begun to embrace student-centered learning strategies as the pathway to encourage students to self-regulate and become self-determined (Sabeh & Du, 2018). Student-centered learning strategies create active learning opportunities because the focus moves from what the teacher does to what students do (Hopkins, 2011; Zhu & Zhang, 2019). When learners begin to think about their learning in a structured self-referenced way, they begin to make the proper adjustments that will most likely lead to successful outcomes (Mutambuki et al., 2020). The critical function of student-centered learning instructional approaches is to examine learners' prior knowledge and needs (Shangguan et al.,

2020) to help learners successfully negotiate the course outcomes, which should align with student expectations (Lee & Hannafin, 2016). Teachers must know how to effectively profile students so that they obtain the proper data to provide the appropriate scaffolding and interventions necessary for student achievement (Jackson et al., 2013; Park & Hiver, 2017).

Profiling students can be an extremely daunting task as many different types of profiles, even among high-performing students (Broadbent & Fuller-Tyszkiewicz, 2018). Learners negotiate courses fitting profiles that include highly self-regulated, cognitive, behavioral, and minimally self-regulated tendencies (Zheng et al., 2020). Teachers' competency regarding profiling students is essential because the core of student-centered learning is differentiation, personalization, scaffolding, and the deployment of various types of interventions (Jackson & Evans, 2017). Teachers must be trained in collecting, aggregating, analyzing, and synthesizing student data to provide these instructional services (Tondeur et al., 2018). Moreover, the various types of data teachers collect may be based on various factors such as student population and the overall school climate (Holmqvist et al., 2018; Reeves et al., 2021). Making data-driven decisions supports effective instructional engagement that establishes a meaningful rapport with all actors of a learning community and permits the implementation of appropriate teaching methods and supports (Schildkamp, 2019). Ultimately, student-centered learning mainly focuses on providing opportunities for students to take responsibility for their learning (Keiler, 2018) and transforming teacher roles to researchers and facilitators from knowledge overseers and epistemological managers (Dole et al., 2016).

Related Literature

The approaching learning economy demands compel societies to think about the methodologies that will inform pedagogical approaches. Governments will have to consider the pathways to prepare learners to become independent actors and prosumers for the good of local

and global commons (Rifkin, 2014). The learning economy will be a twenty-four bio-digital market that interwinds every aspect of the human condition forming comprehensive solutions based on adaptive information networks powered by artificial intelligence (Rifkin, 2014). This reality questions the static nature of teaching and learning that still exists as we rapidly approach the second half of the twenty-first century. Consequently, innovation requires teachers to transform their teaching ideas and learning to focus on learners' wants, needs, and expectations. Educators must move away from teacher-based approaches that resemble a cloning effort toward focusing on learners' competencies to decide how they will affect the local and boarder community (Ritchhart, 2015). Learning has to become an affair of introspection and experimentation of individual and collaborative hypotheses. Teachers have to be the brokers of those experiences. Knowing what inflates and deflates learners has to be the foundation to facilitating personalized and differentiated learning experiences

The act of learner profiling has to become the core method in engaging learners regardless of the mode of instructional delivery. The unfortunate encroachment of COVID into the human experience has introduced new norms while also illuminating pre-pandemic instructional missteps. The failure to implement widespread learner profiling as an essential teaching method impedes educators' ability to develop instruction that offers context that is understandable, meaningful, and compelling (Krashen, 2019). The task of planning, revising, scope and sequencing, and providing the most appropriate instruction to a class of learners whose success is determined by their ability to self-regulate their learning requires teachers to make data-driven instructional decisions (Park & Datnow, 2017). The trending consensus is that student-centered learning yields correlate to student achievement, promotes self-regulation, learning transfer, and remedies the inert knowledge problem (Borg & Alshumaimeri, 2019; Larsen-Freemen, 2016; Pejuan & Antonijuan, 2019). Student-centered learning relies on teachers

embracing a belief that students must take responsibility for their learning (Lee & Hannafin, 2016), and the instruction that facilitates learning will be specific to individual personalities and personal goals (Dorrenbacher & Perels, 2016). Student-centered learning depends on the teacher's ability to collect, aggregate, analyze and synthesize student data in ways that address the individual needs and collective needs of a learning cohort (Kurilovas, 2020).

Needs Analysis

Needs analysis provides data that is often the catalyst for building schools, creating curriculum, and implementing interventions that support student achievement. Conducting ongoing needs analysis allows educators to make data-driven decisions that attract and maintain learners' attention and cooperation (Dirksen, 2016). Furthermore, learning profiling allows teachers to track students' motivation. When teachers equip themselves with information on various types of information about the learner, instruction becomes student-centered (Reigeluth et al., 2017). Student-centered instruction requires educators to understand the nuisances of all learners to personalize and differentiate instruction. Continuously monitoring students' motivations, needs, and feelings increases student attendance, promotes student achievement, and allows for creating and implementing effective interventions (Allen et al., 2018). Student-centered instruction requires learners to feel a sense of belonging to attend school and value the information presented (Martinez-Cola, et al., 2018).

Students' sense of belonging to a school is directly related to the support teachers provide (Allen et al., 2018). Educators' ability to support students strictly depends on educators' ability to make data-driven decisions (Mandinach & Gummer, 2015). Teachers must integrate needs analysis processes as a part of their teaching practices to inform their teaching (Kurilovas, 2020). Teachers will produce learner profiles that should periodically record "prior knowledge, intellectual level, interests, goals, cognitive traits (working memory capacity, inductive reasoning

ability, and associative learning skills), learning behavioral type (according to his/her self-regulation level), and, finally, learning styles" (Kurilovas, 2020, p. 2). Conducting ongoing needs analysis shows that a learner profile can be shared to make informed educational decisions throughout the learning community. Moreover, teaching instructions become personalized, which leads to overall student efficacy (Kurilovas, 2020).

Teacher Perceptions

Teachers' perception and a lack of professional development concerning data-driven decisions are the two primary roadblocks preventing teachers from engaging in learner profiling practices (Datnow & Hubbard, 2016). Often school leaders are not investing the time and resources to support teachers in implementing profiling strategies that support student-centered learning, which in turn influences the belief systems of subordinate teachers (Datnow & Hubbard, 2016; Timothy & Agbenyega, 2018). One consistent problem regarding school leadership is that they are not instructional leaders but school administrators (Bafadal et al., 2019). School districts' or learning organizations' instructional belief systems may determine the professional development school leaders receive, affecting perfecting decisions through data analysis (Dunn et al., 2019; Schildkamp et al., 2019). Learner profiling or data-driven decision-making is a school climate concept that supports student-centered, and therefore must be modeled from top to bottom (Rudasill et al., 2018). School leadership must inspect what is expected of teachers and educators directly or indirectly involved in instructional delivery. When teachers are left to their instructional preferences and not challenged to explore other teaching and learning options, they are more likely to make excuses for why learner profiling is ineffective (Dunn et al., 2019; Schildkamp et al., 2019).

Teacher disdain regarding practicing learner profiling to make informed decisions often derives from the notion that teacher judgment and experience suffice for appropriate instructional

decision-making (Zhu et al., 2018). However, research indicates that teacher judgment and experience alone do not consistently correlate with student achievement (Meissel et al., 2017). Thiede et al. (2018) indicate that teacher judgment is informed by cues that include demographical data, formative assessments, observations, and motivation profiling. Teachers make judgments based on observations they make as they engage students. These observations are soft and fail to go through a process that allows teachers to make instructional decisions that are based on analysis, collaboration, and student choice (Glogger-Frey et al., 2018; Thiede et al., 2018). Increased professional development and school leaders' expectations that focus on instructional preparation and planning will help teachers develop student-centered learning environments (Czajka & McConnell, 2019). Furthermore, such professional development will help teachers understand the importance of making data-driven decisions, improving teachers' perception and efficacy regarding learner profiling (Zhu et al., 2018).

Teacher Noticing

Teachers promote effective learning by spontaneously providing direction and inputs that facilitate students' understanding during a learning transaction (Machaba, 2018). The ability to decide the most appropriate action based on the context occurring in real-time is the foundation of teacher noticing (Ferdig & Kosko, 2020). Learner profiling allows teachers to identify the nuance variances that occur during a learning transaction and adapt to that variance to create a learning opportunity. Ferdig and Kosko (2020) label teachers' ability to create such a learning transaction as situated awareness where teachers can understand the context, identify what is essential, and make appropriate decisions about what should happen next. The learner profile offers teachers the background information to appropriately notice and make professional decisions that will benefit the learners within that particular interaction and beyond (Seidel et al.,

2021). Through teacher noticing, educators can find the commonality in the learners in their classrooms to appropriately plan, personalize and provide iterative instruction (Willingham & Daniel, 2012). It is particularly critical to note that the teacher is also a learner with respect to learning profiling as teachers must include themselves when seeking commonalities among students (Gehlbach et al., 2016). The learner profile provides opportunities for teachers to measure their perceptions against the perceptions of their students to find commonalities so that healthy teacher-student relationships can be developed (Gehlbach et al., 2016).

Teacher-Student Relationship Quality

Student perceptions about learning are a primary factor that determines student performance (Koca, 2016). Student centered-learning approaches support learners in developing their ability to become self-determined and self-regulated which is likely to result in self-efficacious learners motivated to perform beyond the standard (Koca, 2016; Reigeluth et al., 2017). Teachers nurture these essential characteristics by providing the most appropriate instruction and facilitation that responds to the students' wants, needs, and expectations (Hajovsky et al., 2020). Mason et al., (2017) study found that teachers who perceived students as academically competent were most likely to engage in positive instructional practices with those students versus students who were not rated as academically competent. As a result, the students who experienced positive and nurturing learning transactions outperformed students who did not receive the same engagement (Mason et al., 2017).

Learning profiling allows teachers to account for students' perceptions about what they are learning so that teachers can provide learners with proper personalization, scaffolding, or interventions that encourage student independence and performance (Rogiers et al., 2020). Teachers who commit to building positive relationships with students allocate opportunities that become instructional rituals that provide current data about student experiences and perceptions

(White, 2020). Not only do these instructional rituals enable openings for teachers to actively learner profile, but these daily routines have been linked to increased student achievement and performance (White, 2020). Educators can use this data aggregated from the learner profile to find commonalities in learners to create homogenous high-performing ability groups (Du Plooy, 2019) or create personalized learning experiences such as connected learning opportunities (Porath & Hagerman, 2021). Connected learning is a form of personalized instruction that requires teachers to actively learner profile to know the needs and interests of learners so instruction can be adapted to increase student production and opportunities to share students' products via a network (Porath & Hagerman, 2021).

Teacher Attunement

The learner profile is the vehicle that provides teachers with the appropriate and real-time data that enables teachers to create strategies like connected learning so students can experience independent, effective learning. Teachers' ability to identify, label, group, and efficiently respond to individual and class perception and dynamics is known as teacher attunement (Marucci et al., 2018). Classrooms are full of cultural, economic, generational, religious, or political diversity, and teachers must develop the ability to sense and understand individual and group perception within these learning spaces to notice errors properly and recast mistakes (Hopkins, 2011). Teachers must also link student realities with the course content that induces meaningful student synthesis (Rosebery et al., 2016). Farmer et al. (2018) suggest that teacher attunement also serves as a teaching and learning asset that establishes and promotes well-balanced and stable social *eco-systems* for learners with special needs.

Teacher attunement supports healthy learning environments to mitigate social unbalances such as bullying (Marucci et al., 2021). When teachers perceive that their only responsibility is delivering instruction, they often fail to integrate students' socio-emotional development as a

learning outcome (Marucci et al., 2021). Schools must focus on students' socio-emotional development because a failure to do so could result in people's inability to self-regulate and advance their interpersonal and intrapersonal skills (Domitrivich et al., 2017). The concept of assisting students to become life-long learners is contingent on integrating socio-emotional development within a curriculum (Jensen et al., 2017). Teacher awareness about instruction's impact on how students feel about their learning will inform teachers on any method adjustments that may affect and enhance student performance (Jensen et al., 2017). Jensen et al. (2017) note that socio-emotional interventions require "ongoing evaluation of the individual child as well as of the pedagogical process" (p. 28). Teachers who are attuned can connect the data from student profiles with the utterances and noise that occur during real-time learning transactions (Hamm et al., 2011). This connection allows teachers to decipher student perceptions and attitudes to determine the most appropriate action (Hamm et al., 2011). Teachers can develop their intuitive skillsets to make efficient and proper in-the-moment instructional decisions (Abraham, 2019).

Teacher Intuition

Classrooms are constantly changing environments due to the many variables contributing to shifts in attitude, mood, and perceptions (Fassinger, 1995; Garner & Kaplan, 2019; Pawlak et al., 2016; Sipman et al., 2021). Teachers must be able to notice these shifts to reflect and process their perceptions and their students' perceptions as it relates to the instruction. Almuntasheri et al. (2016) note that teachers must connect students' prior knowledge and "listen, observe and guide students" through the process of inquiry (p. 21). Teachers can only control their teaching, which may or may not influence students' learning (Garner & Kaplan, 2019). In the context of learning spaces, intuition is the catalyst that launches how all the actors within a particular learning space perceive and respond to the many shifts that occur (Sipman et al., 2021). Adaptive teaching is an instructional method that relies on teacher awareness to make in-the-moment

teaching that responds to these shifts (Vaughn et al., 2016). Teacher intuition means the facilitator continuously engages students based on what transpires in real-time (Abraham, 2019). Egalite and Kisida (2018) suggest that intuition affects teacher-student relationships' perceptions to the extent that teacher-student assignments should be based on race or ethnicity. The authors' position is that students realize academic gains when paired with teachers who are of similar racial and minority experiences (Egalite & Kisida, 2018). Although this position needs further research, the most highlighted underlying theme is the notion that teachers must understand who their students are to facilitate academic success.

Sipman et al.'s (2021) study regarding intuition suggests that teachers can develop their ability to be more intuitive through professional development. Intuition does not replace instructional planning, but it does allow teachers to respond to the spontaneity of face-to-face or synchronous instruction correctly (Sipman et al., 2021). Local intuition relies on one's ability to recall prior knowledge and experience (Sipman et al., 2021). Learner profiles are instruments that educators use to establish and supply teachers' prior knowledge about students, while teacher reflection of classroom interactions enables meaningful experiences that enhance intuition in both teachers and students (Jauhariyah et al., 2018). Teachers who learner profile can provide experiential learning opportunities that follow Kolb's learning cycle (Fewster-Thuente & Batteson, 2018). As a result, both teachers and students become active learners, creating an authentic learner-centered instructional environment (Hyun et al., 2017). In these active learning environments, teachers provide authentic experiences for students to conceptualize to intuit better higher-ordered reading activities such as making predictions, inferencing, and making connections with personal experiences (Cox, 2017).

Active Learning

The literature has noted the academic gains learners experience due to active learning techniques (Hwang & Chen, 2017; Hyun et al., 2017; Theobald et al., 2020). However, active learning methods are only as effective as the learners' expectations and perceptions about those approaches (Shaw et al., 2019). Teachers must obtain student buy-in to motivate learners to engage in the instruction (Shaw et al., 2019). Furthermore, the instruments used to assess student perceptions about learning must be both valid and reliable (Shaw et al., 2019). Formative assessments are not just opportunities to measure student academic gains, but it is just as important for educators to understand what students feel about their learning to facilitate effective learning (Shaw et al., 2019). Active learning environments work because teachers must take the time to know what context students will best respond to and engage learners with fidelity to evidence-based instruction (Theobald et al., 2020).

Earl Stevick's technemes address the need for learners to have variation through iterative instructional activities (Larsen-Freeman, 2013). Stevick understood that the classroom experience changes at various points throughout a block of instruction, so repetition may not be the best instructional approach (Larsen-Freeman, 2013). However, variations of a technique that works may potentially evoke an emic difference that causes learners to have continuous meaningful experiences (Larsen-Freeman, 2013). Stevick believed that "in order for an emic change to take place, the change must dissipate restlessness among those students for whom things have been moving too slowly, and not cause trouble for the less advance students" (Larsen-Freeman, 2013, p. 191). Emic, in this case, refers to teachers' ability to notice and appropriately respond to learners' perceptions defined by the learners' determination and reflection of their experiences (Helfrich, 1999). The emic perspective begs educators to see the student profile as a dynamic instrument reflecting students' every changing attitude about their

learning and their lives, especially concerning their agency (Larsen-Freeman, 2019). When teachers engage in active learner profiling, they will begin to understand that students' emotions drive cognitive engagement (Karagiannopoulou et al., 2020). The student profile allows teachers to engage in contextual instruction that avoids students' defense mechanisms when they are not emotionally connected to the learning (Karagiannopoulou et al., 2020).

Student Motivation

An essential teacher act is to determine student motivation to learn and create instructional opportunities aligned with students' sense of determination and agency (Larsen-Freeman, 2019). Self-determined students actively work towards goals inspired by themselves, considered intrinsic motivation, or an authority source students value sets and encourage goals for them, making the students extrinsically motivated (Watson & Watson, 2017). Crow and Henning (2020) explain that amotivation is a third type of motivation that students experience when they lack interest or perceive they cannot accomplish a goal. It is important to note that motivations are feelings, and feelings are conscious representations of our emotions (Shelton-Strong & Mynard, 2020). As students experience instruction, they process all the inputs within the learning environment to construct meaning and measure that meaning against their wants, needs, and expectations (Shelton-Strong & Mynard, 2020). Krashen's affective filter theory is grounded in the notion that students' emotional state drastically impacts language acquisition and effective learning (Patrick, 2019). If students feel optimistic about the learning interaction, knowledge acquisition, and learning transfer are more likely to occur because learning is a process of "trial and error, experimentation and failure" (Shelton-Strong & Mynard, 2020, p. 4). Therefore, the student profile is a necessary representation of students' motivations, while the act of learning profiling is the interaction required to reflect, understand and label those depictions.

After over 30 years of back and forth concerning the affective filter theory and the concept of comprehensible inputs, Krashen still affirms that teachers must provide inputs to students that are understandable and compelling (Krashen, 2019). The compelling aspect of Krashen's position speaks explicitly to a phenomenon that goes beyond motivation and interest and enters a state of *flow* (Krashen, 2011). Flow is a feeling state where the learner is positively attuned to the instruction that time suspends, and the goal of accomplishing the task trumps threats within the learning environment (Beard, 2015). Flow is an intrinsic phenomenon that has been associated with self-determination (Olcar et al., 2019). Teachers can help induce students' flow by providing instructional inputs that increase a sense of competence through challenging tasks aligned with the demands of students' goals (Olcar et al., 2019). A greater sense of student flow and enjoyment can occur when teachers provide students with self-referential feedback concerning their performance (Zarrinabadi & Dehkordi, 2021). Teachers' primary goal is to provide inputs and activities that most likely will offer learners opportunities to have optimal experiences that are interesting and rigorous (Schneider et al., 2016).

Teaching in Context

Krashen (2017) explains that we build on learning by providing learners with comprehensible or understandable inputs. Providing understandable inputs means teachers must teach in context so that students understand (Hopkins, 2011). Supporting effective learning requires teachers to have emotional knowledge of their students to create contextual instruction students can comprehend (Darragh & Petrie, 2019). In foreign language teaching, educators often use the intercultural approach to point out particularities in cultures so that students can identify similarities to avoid misunderstandings (Kostikova et al., 2018). The teacher serves as a "mediator" between the culture of the target language and the students' culture, which means the teacher has to "contextualize" the instruction (Kostikova et al., 2018, p. 15). When creating

context, students' feelings and perceptions become the central focus of foreign language teaching because the teacher's intent of the contextualization is to get students to reflect on the target language culture in relation to their experiences (Kostikova et al., 2018). When students can link instruction with their experiences, beliefs, and goals, they are more likely to experience classroom autonomy, enabling them to engage the instruction in ways that create meaningful practice and reflection (Williams et al., 2016).

Student Choice

The learner profile helps teachers know what appropriate context reflects students' experiences (Klasnja-Milicevic & Ivanovic, 2018). Through learner profiling, teachers can emically become aware of the student perspective and offer context through student choice (Williams et al., 2016). Student choice within context students understands increases student motivation, engagement, efficacy, connectedness, and value (Williams et al., 2016). Williams et al. (2016) note that teachers should provide two to four options to students to uncover the affordances of student choice. However, the number of choices or the kind of choices are not as important as how students perceive the choices (Parker et al., 2017). Student choice allows learners to authentically represent the values, beliefs, and perceptions about what is being learned (Parker et al., 2017; Williams et al., 2016). Student choice offers students a sense of competence, relatedness, and autonomy (Parker et al., 2017). Teachers' ability to create instruction representative of the student perspective offers student voice which satisfies the amygdala (Willis, 2007), promotes autonomy, and creates learning spaces of discovery (Boatright & Allman, 2018). Teachers not only create enriching experiences for students to reflect on their learning, but they also induce accurate and reliable data to continuously update each learner's profile (Boatright & Allman, 2018). This data is one of the primary elements of differentiated instruction.

Student Perception

The barrier that denies student achievement is often educators' unwillingness to shift the focus from an effective teaching mindset to enhancing one's ability to effectively learn (Lujan & DiCarlo, 2006; Ritchhart, 2015). Learning will occur regardless of whether it is formalized (Ainsworth & Eaton, 2010). Prior knowledge affects how we perceive our experiences because we predicatively code between our prior experiences and sensory inputs (Aru et al., 2016). Teaching is an organized effort that must start from learners' prior knowledge and deal with perceptions about that knowledge (Van Sickle, 2016; Zambrano et al., 2019). This reluctance to observe and consider students' wants, needs, and expectations is superseded by teachers' need to consider their feelings, abilities, and goals (Korthagen, 2017). However, effective teaching must be the void of how teachers feel and operate solely at the service of students' conditions (Lebaron et al., 2016). Effective teaching must be predicated by learners' intrinsic requirements (Wulf & Lewthwaite, 2016). Student feelings about what they are learning and their perceptions of the usefulness of what they are learning must be the outcomes of formative assessments that will inform teacher methods (Prashanti & Ramnarayan, 2019). Student perceptions provide educators with data to determine student readiness, course design, content, context, accommodations, and need for intervention (Martin et al., 2020). Formative assessments are effective instruments used to assess student perception (Brazeal & Couch, 2017).

Formative Assessments

Teachers can apply formative assessments in various forms to determine the students who are likely to thrive in a particular course and the students who may need additional support and accommodations to respond to intervention (Brazeal & Couch, 2017). The purpose of formal assessments is to provide instructors with data to determine the best method based on the learning transaction (Reddy et al., 2016). Formative assessments serve as essential instruments

that continuously feed the student profile, which allows the teacher to engage in active learner profiling (Tempelaar et al., 2018). Formative assessments drive adaptive learning, which streamlines and personalizes teaching and learning interactions (Tempelaar, 2020). The formative assessment enables the teacher to provide students with comprehensive and meaningful feedback that the student can use to adjust and adapt to develop agency (van der Kleij, 2019). Rakoczy et al. (2019) found that when applied effectively, formative assessments can provide learners with opportunities to reflect on their perceptions of the usefulness of instruction, which could also support student efficacy and interest. Also, formative assessments provide teachers with the data required to effectively differentiate instruction based on students' learning styles and needs (McGlynn & Kelly, 2017).

Differentiated Instruction

Tomlinson (2003) informs us that the learner profile is a critical element of differentiated instruction (DI) because it makes learning efficient. Regarding differentiation, the learner profile allows teachers to determine students' readiness and interests as the profile's specific function is to represent students' learning styles and preferences (Tomlinson et al., 2003). DI is simply about teachers recognizing the strengths and weaknesses in learners and ways that allow students to showcase gifts and receive accommodations where gaps in ability occur (Suprayogi et al., 2017). Differentiation is also an effort of equity for all students within a learning space because there is never true homogeneity in a classroom (Tomlinson et al., 2003). DI makes every attempt to customize instruction for learners without frustrating or creating unpleasant learning experiences for others (Leppan et al., 2018).

Teachers plan DI opportunities throughout three phases: the pre-active, interactive, and post active phrases (Colognesi & Gouin, 2020). The pre-active phrase means teachers are planning before the lesson (Colognesi & Gouin, 2020). The interactive phrase means teachers

adapt instruction based on the classroom climate and interactions (Colognesi & Gouin, 2020). The post-active phase allows teachers to modify instruction between lessons (Colognesi & Gouin, 2020). The learner profile facilitates the planning and adapting process by offering student perception data that informs what inputs teachers should offer students next (Colognesi & Gouin, 2020). Kumaravadivelu (2003) suggests that teachers look for the particularities, possibilities, and practicalities to determine the best method given the context. It is important to note that teachers may not have the time or resources to create effective DI opportunities for learners (Hertberg-Davis, 2009). In these cases, teachers can use the profile to refer students to interventions outside of scheduled instruction and the normalized learning space (Colognesi & Gouin, 2020).

Internet-Based Learning and Adaptive Learning

The primary advantage of Internet-based learning is that it offers personalized learning experiences that enable learners to practice targeted competencies and skills while developing higher-ordered thinking based on their current ability (Lee et al., 2018). Differentiation and personalization of instruction are challenging instructional acts that require most educators to perform continuous assessments, be flexible, make their teaching adaptable, and intensely use learner profiles (Linder et al., 2019). Technology integration has transformed the learning experience in ways that allow for both teachers and students to engage one another iteratively and collaboratively (Brenner & Brill, 2016). Furthermore, this transformation is the vehicle for student-centered learning strategies such as problem-based and project-based learning (Baser et al., 2017). Teachers can develop virtual learning opportunities via learning management systems (LMS) to supplement direct instruction or provide learners with the core knowledge to complete tasks (Ain et al., 2016). Adaptive learning technologies allow students to create unique

representations of what they have learned when teachers personalize the instruction (Bernacki & Walkington, 2018).

Adaptive technologies work because they continuously collect user data to provide learners with content that informs, relieves, or ensures the student (Xie et al., 2019). The sole purpose of adaptive technology is to provide supports and interventions based on the standards, the expected course outcomes, and the learner's needs and expectations. Adaptive technologies provide context learners understand (Tortorella & Graf, 2017). Adaptive technology mimics and responds to authentic social situations to simulate real-life learning interactions (Vogler et al., 2019). Profiling is essential to adaptive learning technologies' functionality and effectiveness because it attempts to provide scaffolding and real-time interventions (Basu et al., 2017). Moreover, adaptive learning opportunities may enhance a learners' likelihood of experiencing learning transfer (Noroozi et al., 2018). Technology's ability to process information about a learner's online actions against the course expectations and outcomes and other variables such as prior knowledge and experience enables an adaptive platform to provide iterative and cross-curricular content that promotes higher-ordered thinking (Premlatha et al., 2016). Although adaptive technologies offer many supports that enhance the teaching and learning experience, many governments and school districts have not embraced the integration of Internet-based learning or adaptive technologies (Mirata et al., 2020).

Regardless of the plethora of research that confirms the benefits that technology integration has on teaching and learning, many schools and teachers still have not embraced the use of Internet-based instruction within their curriculums (Alenezi, 2017). In some cases, the reason for technology avoidance is strictly based on the high expense of installing, maintaining, and updating hardware and software and hiring and training staff (Bajracharya, 2017). Learning organizations fail to use technology because of a lack of collective faculty confidence regarding

blending technology with instruction (Awofala et al., 2017). Awofala et al. (2017) also believe that teachers can infect learners with the condition of computer anxiety if they do not build collective efficacy concerning blended learning. Ultimately, schools' use of blended learning is related to the schools' commitment to engage in best practices (Tingir et al., 2017). Furthermore, when schools integrate technology, they actively practice student-centered approaches to ensure learning transfer through positive teacher-student interactions (Lo & Hew, 2019).

The rich data that Internet-based technology collects and analyzes through learning analytics helps educators not only make data-driven decisions but also allows for just-in-time interventions that would otherwise be difficult to provide in a traditional face-to-face learning environment (Figaredo et al., 2020). Using blended learning strategies allows teachers to smoothly transition from instructor and learning manager to facilitator and advisor (Bingham, 2016). The change in assignment means that teachers must be proficient in analyzing data and accessing and synthesizing learner analytics resources to inform face to face instructional practices, communicate findings to the school community, including learners and parents, and determine appropriate intervention that will help learners meet or exceed the standard (Kuromiya et al., 2020). Learning analytics allows educators to access data that provides evidence that the planned instruction will mostly lead to a result that promotes student-centered learning and learning transfer, self-regulation, self-determination, and life-long learning (Kim et al., 2016).

Summary

Although society often limits or constricts the educators' role, teachers must redefine themselves as social scientists to exhibit and apply the qualities necessary to practice learner profiling to personalize and differentiate instruction (Rushton & Reiss, 2019). They must do their best to shed themselves of any academic, social, economic, and cultural bias to effectively shepherd learners to independence (Borg & Alshumaimeri, 2019; Moffatt, 2015). Teachers'

perception influences instructional methods and determines student-teacher communication effectiveness (Sellah et al., 2017). Once this occurs, teachers will be adequately suited to use the learner profile as a tool to begin dynamic instruction that prioritizes context in terms that learners understand, value, and can develop synthesis from it.

Adaptive learning has established the value of learning profiling in both traditional and virtual learning spaces. The literature supports the teacher's use of learner profiling to inform instruction (Tilea et al., 2020). However, the literature does not explicitly encroach on the practical use of profiles in face-to-face learning spaces. To what extent do teachers profile? How do teachers collect, aggregate, and synthesize student data to inform method and intervention? Is there a connection between teachers' belief and their likelihood to profile as an instructional method? This research seeks to breach these questions and provide the literature with more comprehensive understanding of learning profiling, teachers' perceptions, and the student experience.

CHAPTER THREE: METHODS

Overview

This study utilized a quantitative, quasi-experimental nonequivalent control-group design that examined the possible impacts teacher credentialing and the act of learner profiling has on fourth-grade student achievement using an internationally recognized reading assessment. The sections of this chapter explain the design, participants, instrumentation, procedures, and data analysis in sufficient detail for replication. The researcher explained any nuisances concerning the execution of this study.

Design

The purpose of a quasi-experimental nonequivalent control group design is to test a null hypothesis using statistical analysis that controls for pre-existing differences between the groups. The researcher manipulates the independent variable and seeks to determine a cause-and-effect relationship between the independent and dependent variables (Gall et al., 2007). A quasi-experimental pretest/post-test only design is used instead of a true experimental design when random assignment is either impossible or impractical (Gall et al., 2007). The quasi-experimental nonequivalent control-group design is the most appropriate method to observe and test the independent variables' effects on the dependent variables in their natural environments (Gall et al., 2007).

The researcher must ensure the investigation meets the following criteria before deploying a quasi-experimental, pretest/posttest design. First, the investigation must seek to determine causality between the experimental treatment and the outcome. During the research, participants can be randomly assigned to neither the treatment nor the control groups, and a minimum of one experimental group and a control group must exist (Gall et al., 2007). Apparent similarities between all research participants exist, and at least one categorical independent

variable between two or more groups exists (Gall et al., 2007). The research requires manipulating the independent variable, and the dependent variable is measured on a continuous scale (Gall et al., 2007). Furthermore, the researcher must ensure that only the experimental group receives the treatment. Finally, the investigator must proctor a pre-test before administrating any treatment, and all participants must simultaneously engage in the post-test (Miller et al., 2020). The pre-test is used as the covariate in the analysis.

This study seeks to determine whether causality exists between student achievement and credentialed and non-credentialed teachers who may or may not implement learning profiling strategies during their instructional practices. All participants are fourth-grade English learners or teachers enrolled in international or national schools in Riyadh, Saudi Arabia. All student participants engaged in a PIRLS reading pretest. Afterward, the researcher identified participating teachers who received intensive learner profiling training. The control group consists of all the teachers who do not receive the learner profiling training. Random assignment did not exist because the schools pre-enrolled students and teachers in fourth-grade English classes. After the treatment, all participating students, including the control group, concurrently engaged in a PIRLS posttest.

A review of the literature will note that quasi-experimental nonequivalent control-group design has been recently used in a range of educational-based studies regarding issues of student achievement, self-efficacy, learning styles, instructional techniques, and digital learning platforms (Gall et al., 2007; Lashley, 2017; Wyman & Watson, 2020; Yanti, 2016). Researchers use quasi-experimental nonequivalent control-group designs when there is a lack of random assignment of the experimental and controls, and both groups are subject to a pretest and a posttest (Gall et al., 2007). This design is appropriate for this study because it allows for lack of

randomization, can be conducted within the participants' natural environment, has a low error propagation, and a decreased chance of maturation and attrition (Krishnan, 2018).

The current study looks to identify relationships between teachers' qualifications and the use of learner profiling as a strategy. This investigation includes two independent variables. The first independent variable denotes teachers' credentialing status, consisting of a group of credentialed educators and a group of non-credentialed teachers. The second independent variable highlights teachers' learner profiling status and includes a group of teachers who engage in learner profiling and a group of teachers who do not engage in learner profiling. The dependent variable is the fourth-grade PIRLS reading scores. PIRLS is an internationally recognized reading assessment proctored to fourth-graders globally. The covariate is the students' current English proficiency levels as Saudi Arabian international schools tend to be diverse relating to nationality, ethnicity, and exposure to the English language.

In most countries, including America, teachers must meet requirements for licensure that ensure people are qualified to engage students in formal learning environments (Kretchmar & Ziechner, 2016). However, due to significant teacher shortages in the United States, many states have resorted to creating alternative licensure programs (Bowling & Ball, 2018). Some states have gone as far as to hire provisional teachers who have had limited or no formal teacher training (Wiess et al., 2020). Research regarding teacher credentialing programs' impact on student achievement is conflicting (Howard & Mayes, 2020). Student achievement is also a term that cannot be decisively defined because many perspectives benchmark an achievement. In Visible Learning: A Guide to Student Achievement, student achievement is defined as the "accomplishment of something" (Guskey, 2013, as cited in Hattie & Anderman, 2020). In this study, we measure student achievement using an internationally recognized achievement

assessment. Fourth-grade PIRLS reading scores derived from the students of the participating teachers will be used to measure the possible effect on the dependent variable.

Research Question

RQ1: Is there a difference in PIRLS achievement scores of students whose teachers are credentialed or non-credentialed and those who have been trained in the implementation of learning profiling or who have not been trained?

Hypotheses

$H_0$1: There is no difference in PIRLS achievement scores of students whose teachers are credentialed and non-credentialed.

$H_0$2: There is no difference in PIRLS achievement scores of students whose teachers have been trained or have not been trained to implement learning profiling.

$H_0$3: There is no difference among PIRLS achievement scores among students whose teachers have been trained or have not been trained to implement learning profiling based on their teacher's credential status.

Participants and Setting

Population

The participants for this study were fourth-grade elementary international school English teachers and students representing four schools located in Riyadh, Saudi Arabia, during the 2021−2022 academic year. The teachers represent various nationalities from many world regions, including Europe, the Middle East, Southern and Southeast Asia, and Africa. The fourth-grade students are children of parents who are of various socioeconomic groups. The tuitions of these schools will denote the economic status of the children as the yearly fees can range from $4,000 to $25,000 USD. The students in the target population also represent a wide range of nationalities and ethnicities. Many international school students are Saudi nationals, but

other students represent the same regions as the teachers. The researcher used convenience sampling based on existing relationships to identify participating schools, teachers, and students located in the capital city of Riyadh (Gall et al., 2007).

Participants

The sample for this quasi-experimental nonequivalent control-group design consisted of 226 students who attended classes that prepared them for the PIRLS assessment, which is a literacy test given to students throughout the world. A total of 160 PIRLS scores that followed the study's guidelines and included submitting the appropriate consent and assent documents and adherence or non-adherence to learner profiling procedures were obtained. This sample size exceeds the required number of 144 PIRLS scores needed for a two-way ANOVA, assuming a medium effect size with a statistical power of .07 at the 0.05 alpha level when four groups are being observed (Gall et al., 2007). The sample size is extracted from four different private elementary international schools under Saudi Arabia's Ministry of Education Riyadh region supervision. It is important to note that schools in Saudi Arabia segregate students by gender starting at the third grade. The researcher used convenience sampling due to access of teachers, students, and training facilities based on prior relationships with these private international schools that the Saudi Ministry of Education recognizes (Gall et al., 2007).

In this study, the fourth-grade teacher participants included four groups. The researcher selected and labeled four teacher groups as credentialed teachers who actively learner profile, credentialed teachers who do not actively learner profile, non-credentialed teachers who actively engage in learner profiling, and non-credentialed teachers who do not engage in learner profiling. Lastly, for the purposes of this study, credentialed teachers are recognized as any teacher whose home country's responsible agency issued that individual a license to teach within their assigned discipline.

Learner Profiling Credentialed Teachers

All teachers completed a questionnaire that determined their learning profiling status. The questionnaire indicated that two female and male were licensed teachers who practice learner profiling as a teaching approach in their classrooms. These credentialed teachers' ages range between 25 and 30, and their years of experience teaching ranged from four to six years. Participants in this group earned Bachelor's level degrees in English and Education. All of these teachers were licensed in their native countries.

Learner Profiling Non-Credentialed Teachers

Based on the questionnaire concerning learner profiling, out of six non-credentialed teachers, three non-credentialed teachers indicated that they currently actively engage in learner profiling while three do not. The participants in this group consisted of two males and one female teacher. This group's age ranges between 21 and 34. Teachers in this group have taught an average six years. They earned Bachelor's level degrees in English and Education.

Non-Learner Profiling Credentialed Teachers

The questionnaire revealed that three of the credentialed teachers indicated that they do not actively engage in learner profiling as teaching practice. There are two males and one female in this group. These credentialed teachers' ages range between 28 and 57 with all teachers having at least seven years of experience. The credentialed teachers earned Bachelor's level degrees in the following disciplines: English, TESOL, and Education. One of the participants in this group is currently pursuing a graduate level degree in teaching and learning.

Non-Learner Profiling Non-Credentialed Teachers

Three of the non-credentialed teachers indicated that they do not actively engage in learner profiling. This group consists of two females and one male teacher. These non-credentialed teachers' ages ranged from 21 and 34. Their years of experience ranges from one to

ten years. Participants in this group possess Bachelor's level degrees in English, and General Studies.

Setting

Saudi Arabia is a country currently amid a cultural, economic, and social transition. The nation had been synonymous with extremist Islamic values and Sharia law, which has placed it under Western scrutiny regarding women's rights, freedom of the press, and humanitarian issues. However, over the past decade, the country has made many strides rebranding itself through efforts that have overturned past repressive laws and royal decrees that catalyze future societal innovation and global compatibility (Pilott et al., 2021). The Kingdom's shift has also brought about the reconstitution of the country's academic sector. Primary, secondary and higher education are moving away from didactic pedagogy and andragogy to student-centered learning strategies aligned to meet the twenty-first-century demands (Abdulrahim & Mabrouk, 2020). Saudi Arabia academia is straying away from institutions that promote conformism (Al Lily & Alhazmi, 2017) to teaching and learning environments that promote critical and collaborative learning through digital and non-traditional resources (Sajid et al., 2016).

The Kingdom of Saudi Arabia still has a journey in front of it regarding its transition and meeting the outcomes set by the Saudi 2030 Vision (Allmnakrah & Evers, 2020). One of the Kingdom's obstacles is its low ranking on international assessments such as the PISA, PIRLS, and TIMMS (Ali, 2020). Saudi Arabia scored second to last out of the six Gulf Cooperative Council countries (GCC), with Kuwait having the lowest average scores (National Foundation for Educational Research, 2018). The Saudi 2030 Vision looks to raise the Saudi students' academic performance as a direct link to expand Saudi economic opportunities beyond fossil fuels while decreasing Saudi unemployment (Mitchell & AlFuraih, 2018). Saudi Arabia's Ministry of Education has been issuing requests for funding proposals (RFPs) to national and

international education vendors to manage and operate Saudi National schools to improve student academic performance (Asquer & Alzahrani, 2020).

This study's participants are teachers and students employed and enrolled in private international schools in Riyadh, Saudi Arabia. International schools and private national schools are vital to Saudi Arabia's academic landscape as only Saudi nationals are permitted to attend Saudi public schools. Although this number has decreased due to Saudization, approximately ninety percent of the private labor force are expatriate workers (Alkhamis et al., 2017). Many of these expatriates in the Kingdom are long-term residents, and some were born in Saudi Arabia (Khraif et al., 2018). Approximately 1000 international schools in Saudi Arabia support expatriate children (Hammad & Shah, 2018). These schools offer either American, British, or American British dual-option style curricular approaches. All schools, teachers, and students in the sample use English as the primary medium for delivering instruction. Each school provided participant teachers who teach fourth grade English using Cambridge or Common Core State Standards as the primary guidelines that create their curriculums. Many schools use the same Ministry of Education-approved textbooks for supporting instruction.

Instrumentation

Questionnaire

A questionnaire was employed to measure and identify teachers' use of learning profiling during their instructional practices. This questionnaire would be the measurement to determine the level of treatment needed to prepare teachers who were identified as using learning profiling strategies during their instruction. The questionnaire has been used in several studies and is based on Yan and Cheng's (2015) Teacher's Conceptions and Practices of Formative Assessments Questionnaire that measures teacher data use for instruction, teacher self-efficacy, and teacher use of formative assessments (Goodard, 2002; Goodard et al., 2000; Prenger &

Schildkamp, 2018). The researcher will implement the questionnaire to select what teachers would be most likely to be appropriate for the treatment and control groups as this is a quasi-experimental study in which random selection is not needed (Gall et al., 2007). The deployment of questionnaires can assist in determining whether the treatment process is likely to result in the intended outcomes (Abildgaad et al., 2016).

The questionnaire consisted of one scale assessing instructional data use. The scales involving teachers' psychological characteristics were removed as this study focuses on whether teachers are specifically collecting data that will inform them about individuals' learners to guide instructional decisions. This instructional data scale was taking from previous studies (Gelderblom et al., 2016; Prenger & Schildkamp, 2018). This questionnaire contains a total of 29 items and uses a Likert-like scale that addresses four categories of instructional data use: feedback, adaptive instruction, purposeful teaching, and learning time (Prenger & Schildkamp, 2018). The items that addressed instructional data use for the purposes of feedback, including a statement such as "I use data obtained from learner profiling to provide feedback on students' motivation" (Prenger & Schildkamp, 2018, p. 741). Adaptive instructions items sought to examine whether teachers' learner profiled to the personalized, scaffold, and differentiate instruction for individual students "e.g., I use learner profiling data to inform my instruction to weak students" (Prenger & Schildkamp, 2018, p. 741). Purposeful teaching refers to instructional efficiency relating to accomplishing an intended learning outcome beneficial for learners (Tirri et al., 2016). This questionnaire examines items such as "I use learner profiling to assist in setting educational goals" (Prenger & Schildkamp, 2018, p. 741). Learning time addresses teachers' propensity to create learning opportunities in and out of the classroom (Gromada & Shewbridge, 2016). An example of learning time in this questionnaire would include items like "I use data obtained from learner profiling to determine additional homework" (Prenger & Schildkamp,

2018, p. 741). Teachers answered each item by selecting one of the following options for each question: never, once a year, less than once a month, once or twice a month, on a weekly or almost weekly basis, several times a week (Gelderblom et al., 2016).

To increase the reliability of the findings, the researcher interviewed each teacher to confirm and clarify the responses submitted on the questionnaire to determine whether the teacher uses learner profiling as an instructional strategy. The interviewer reformatted the 29 items presented in the questionnaire in the form of questions during the interview. The average interview for each teacher lasted approximately 20 minutes. The researcher performed a principal axis factoring analysis with varimax rotation for the learner profiling use scale (Prenger & Schildkamp, 2018). Reliability for the learner profiling was good, resulting in a Cronbach's alpha of 0.94, higher than the minimum threshold of .69 (Prenger & Schildkamp, 2018). Researchers, educators, and technical experts reviewed this questionnaire to address item vagueness and intent to optimize content validity (Prenger & Schildkamp, 2018). See appendix A to review the author's permission to use the questionnaire in this research and Appendix B to review the questionnaire.

PIRLS Assessment

The Progress in International Reading Literacy Study (PIRLS) assessment is an internationally recognized reading test given to fourth graders worldwide. The International Association for the Evaluation of Educational Achievement (IEA) has managed this assessment for 20 years or five cycles as the test is given every four years. PIRLS focuses explicitly on assessing fourth-graders literacy because this age group transitions from learning how to read to reading to gain knowledge (Thomson et al., 2017). The test aims to provide literacy trend data to inform governments and schools' educational policy and curriculum implementation (Mullis & Martin, 2019). PIRLS seeks to measure test takers' achievement in the realm of the two purposes

of reading: literary experience and acquiring and using information. Within these purposes, PIRLS uses test items that assess the reading comprehension domains of focus on and retrieve explicitly stated information, make straightforward inferences, interpret and integrate ideas and information, and evaluate and critique content and textual elements (Mullis & Martin, 2019).

This study featured PIRLS as a valid and reliable recognized instrument used to compare schools and nations' reading abilities (Laroche et al., 2016). Validity is established using well-developed multiple choice and constructed responses designed to measure reading comprehension learning outcomes at different levels of thinking based on Bloom's Taxonomy (Schult & Sparfeldt, 2018). The global median for the 2016 Cronbach's Alpha Reliability Coefficient was 0.89 (Foy et al., 2017). Governments, schools, and research organizations use PIRLS data to research and inform social and political policy (Ammermueller & Pischke, 2006; Caro & Cortes, 2009; Schubert & Becker, 2010). PIRLS test items are developed using a two-stage random sampling to accurately assess student achievement (Laroche et al., 2016). The PIRLS requirements for a country's sampling precision should have a standard error of no more than .035 standard deviation units for the country's mean average, corresponding with a 95% confidence interval of ± 7 score points for the achievement mean (Joncas & Foy, 2011).

All participating teachers will proctor sample PIRLS assessment items from the 2016 test during their class time to avoid disturbing school operations and planning. In a quasi-experimental design, (Gall et al., 2007) state that both the experimental and control groups must receive a pretest to determine their condition before the treatment was implemented. All participating fourth-grade teachers, regardless of the assigned group, will proctor a sample PIRLS assessment. There will be a total of 29 questions on both sample pre and post-test. The 29 questions will cover both readings for literary experience and reading to acquire and use information frameworks. Test-takers will be given two reading passages in which they will

answer a series of multiple-choice, short answers, fill the blank, and complete the table-style questions. Each question will be scored at a value of 1 point. The maximum number of points a test-tester can score would be 29 points. Test-takers will take a paper pen version of the test. IEA has provided a rubric for teachers to grade each student's test. Finally, teachers will grade students' tests manually, and the researcher double check grades for accuracy.

Procedures

The research did not begin in any form until the institutional review board (IRB) approved the proposal (see Appendix D). The investigator did make informal contact with eight school owners and department heads to obtain site permission to meet the requirements for full IRB approval. The researcher sent email messages, engaged in WhatsApp message exchanges, and visited international schools inside Riyadh's city limits. These schools all met the scope of the study as they all provide formal English courses to fourth-grade students. Schools that agreed to participate in the study received a formal participation agreement after the IRB approved the proposal (see Appendix E).

The researcher conducted a meeting with all participating schools to inform teachers about the study and recruit them. In most cases, the school principal allocated a block time for the researcher to speak regularly, scheduled faculty meetings or English department meetings where fourth-grade English teachers would attend. The researcher circulated a flyer to all fourth-grade English teachers that concisely discloses all aspects (see Appendix F). Potential benefits and harms were also included in the flyer. The flyer also offered all participating fourth-grade English teachers a certificate of participation, free professional development, and a 100SAR gift card to a local grocery store. Incentives are often given to participants to encourage participation (Collins et al., 2017). All participants, regardless of school assignments, received the incentives.

All teachers who expressed interest in the study received a recruitment letter (see Appendix G) and a consent form (see Appendix H).

All participating fourth-grade English teachers who signed the consent form attended a meeting to discuss the study's next steps, protocols, and expectations. The researchers answered all questions and concerns of the participating teachers. The researcher did not have to circulate parent consent forms or student assent forms because the participating schools were currently preparing students for reading comprehension assessments similar to what the PIRLS measures as a part of their planned curricula. In cases where research does not interrupt or alter learners planned instruction, the IRB will approve the research proposal under limited exempt status. The aforementioned approval letter (see Appendix D) explains in detail the conditions in which this exemption are secured.

Each teacher completed a questionnaire so the researcher could become more knowledgeable about the teachers' understanding learner profiling, classroom research, and action research (see Appendix B). The teachers completed the 29-item questionnaire via the paper and pen method. Teachers were allowed to leave the meeting once they completed the questionnaire. The researcher scheduled one-on-one interviews with each teacher to clarify the questions and reaffirm each teacher's learner profiling habits. The researcher turned the statements on the questionnaire into questions to confirm the consistency and reliability of the teachers' answers. After this point, the researcher decided on the teachers who engaged in learner profiling and those who did not. The researcher also requested every teacher to provide evidence of their teacher credentials to determine what teachers were credentialed and not credentialed. A credentialed teacher would possess a license from a government agency stating they have met the requirements to a particular nation, state, or region. Egyptian and Pakistani teachers are not issued governmental license as their Education related degree grants these nationals full

permission to teach within degreed major. However, a Saudi permission to teach from Saudi Arabia's Ministry of Education does not qualify as teaching credentials as this permission to teach is not compatible to the standards and rigor of a governmental teacher's license. Furthermore, provisional licenses were also not recognized as holders of these licenses have not met the complete requirements to teach in a particular country, state, locale, or region.

The researcher observed teachers in their natural teaching environments. The author categorized the participants into four groups: credentialed teachers who learner profile, credentialed teachers who do not engage learner profiling, non-credentialed teachers who learner profile, and non-credentialed teachers who do not engage learner profiling. All teachers who were identified as not engaging in learner profiling did not receive any initial treatment. They did, however, receive the same classes on learning profiling after the study. After the teachers were assigned in their groups, the researcher scheduled a Zoom meeting to discuss proctoring the pretest. The researcher created a proctoring instructions and student list (see Appendix I) that detailed the procedure for students to take the pretest. As mentioned previously, the pretest instrument was a sample 2016 PIRLS exam in booklet form. The pretest consisted of 29 test items, and students were given 40 minutes to complete the assessment as per IEA's test procedures (National Center for Educational Statistics, 2021). Teachers were provided envelopes and temper stickers to affix to the envelope to identify any tampering of test responses. All booklets were placed in a secured file system. The researcher graded each test using the provided PIRLS rubric, and a second educator double-marked all tests to ensure accuracy. If any variances existed between the scores, a third educator only checked the discrepancies.

The teachers who were identified as engaging in consistent learner profiling received a total of four treatments to ensure they were aware of and adhering to best learner profile practices. The four treatments were divided into four one-hour professional development

segments. The participants met the researcher for these sessions every Saturday during the month of (no yet assigned) (year not assigned) from 9 a.m. to 10 a.m. The researcher, a certified master TESOL trainer with eight years of experience training and certifying teachers in TESOL (Teaching English to Students of Other Languages) methods, used the learner profiling module from the TESOL curriculum to engage participants. Fort Hays State University approved this particular TESOL curriculum, Hays, in partnership with TEFL International in 2012. The researcher also has a partnership with Fort Hays State University, in which they unofficially reviewed the 2015 and is currently reviewing the TESOL curriculum. The learner profiling module focuses on integrative, instrumental, intrinsic, and extrinsic motivation and best practices for knowing students (Hopkins, 2011). The module requires teachers to plan and execute at least two one-on-one sessions with one of their students to extract various data types about the student. Before the treatment, teachers will continue to teach and learner profile as per their standard practices.

After the researcher conducted the last treatment session, teachers were given two months to continue teaching their standard English curriculums. During this time, the researcher only made himself available for questions concerning the study. The teachers who were identified as the learner profiling groups turned in weekly journals (see Appendix J) that addressed the following questions: What have I earned about my students this week? How has it affected my teaching? There were no words minimums or maximums. Teachers were required to respond to two questions. Furthermore, the teachers could respond using paper and pen, digital, video, or audio formats. Teachers submitted their journals via a Google Classroom created for this study. The journal's purpose was to ensure teachers in the learning profiling group actively engaged in learner profiling.

Teachers were not given any information about the PIRLS assessment other than knowing that students will take a reading assessment at the end of the two months. Before the assessment, the researcher collected all the parent consent and student assent forms. The researcher called a virtual meeting on Zoom (no date assigned) to discuss test procedures with all participating teachers. The virtual meeting was recorded via Zoom, and the link was uploaded to the assigned Google Classroom. The researcher also created an infographic that could be used as a proctoring aid during the exam. All students except special needs students had 40 minutes to complete 29 test items from one test booklet, covering literary experience and informational parts (National Center for Educational Statistics, 2021). Forty minutes was an efficient time frame because the students' academic day would be disrupted for the assessment. Special needs students were given the appropriate amount of time and accommodation based on their IEP. All students in the study took the same test.

Teachers conducted the post-PIRLS test on (date not assigned) at their respective schools. The date was selected as not to conflict with any other tests or school conflicts. The researcher wanted all participating teachers to proctor the exam on the same day there was parity between all test sites. All school administrators were informed of the test date to support optimal conditions during the assessment period. At the start of the assessment, teachers instructed students not to place their names on the test booklet or identify themselves in any way. All teachers were given an appropriate size sealable envelope and a tamper sticker to place on the envelope, so compromised test sets could be identified. A paid carrier was contracted to collect all the test packets and deliver them directly to the researcher. When the researcher received the test sets, they were immediately placed in a secure filing system. The researcher graded each test using the provided PIRLS rubric. A second educator double-marked all tests to ensure accuracy.

If any variances existed between the scores, a third educator only checked the discrepancies (I will change this to report discrepancies, if any, occurred).

Classroom Research/Action Research Treatment

The intervention's primary purpose is to increase teachers' awareness of classroom research effectiveness in promoting effective student learning and efficient teaching practices. Therefore, the teachers receiving this treatment must demonstrate an openness to the concept of the teacher as researcher. Through practice, these teachers will demonstrate a belief in teacher inquiry, student knowledge, and the adherence to methodology over method (Ryan et al., 2017). The researcher will place teachers in the treatment and control groups based on the questionnaire and the interview responses of each participating teacher. Teachers who most likely have profiling tendencies will be placed in the treatment group, assuming they will most likely apply the treatment in the instructional practices. The researcher is attempting to control for confounding variables that may influence the effects of the treatment (Jaciw, 2020). These confounding variables can include teachers' attitudes and perceptions concerning teacher responsibility in the classroom (Howe et al., 2019).

This intervention includes three learning goals that the researcher will ask teachers to consider when engaging learners. The first goal addresses teachers' current beliefs about research and sets to differentiate the differences between the research scientists conduct in laboratories versus the research teachers do in live classrooms with students. The purpose of this learning goal is to establish the fact that *hard* data can help educators make assumptions about learning interactions, but soft data supports learning acquisition (Sobel, 2016). Ultimately, teachers must be concerned with how students feel about their learning and students' perceived usefulness of what they are learning (Sampson, 2020). Teacher-researchers collect *hard data*

regarding students that may consist of prior grades, race, gender, social, economic, religious, and political affiliations as preparation tools (Gil et al., 2021). However, they are primarily concerned with the *soft data* of students' perceptions about classroom interactions to improve instruction (Farrell & Marsh, 2016).

The second learning goal focuses on teachers developing and sustaining a mindset of continuous instructional improvement using the reflective nature of classroom research known as action research (Gibbs et al., 2017). The module highlights teacher reflection's affordances, resulting in an increase in student agency, curriculum development, practicing theory, duty and ethics, and narrativity (Niemi, 2019). Action research is what teachers do and commit themselves to better understanding the connection between teaching and learning (Freeman, 1998). Ultimately, the module asserts that teachers must abandon their preconceived and conventional notions of research, teaching, and learning as defined object processes but engage instruction as intersubjective interactions managed by learners' experiences (Bradbury et al., 2019).

The third learning goal seeks to introduce or refresh students' knowledge and understanding of essential research elements. In this module, the treatment teachers will focus on concepts such as forming researchable questions, intervention and selectivity, data collection, and data analysis. As teacher-researchers operate at the hyphen (Freeman, 1998), they must understand the researchable questions cannot beg yes or no responses but be worthy of in-depth investigations that consider all plausible possibilities in context (Stylianides & Stylianides, 2020). From the teacher-researcher perspective, they must be second-ordered emic questions that focus on student inclusion and perceptions (Mostowlansky & Rota, 2020). Teachers will also discuss the importance of triangulation by collecting at least three to four data sources to observe how the data compares (James & Augustin, 2018). This module also addresses data analysis with close attention to grounded and a priori analysis. The teacher-researcher must understand that the

manner in which findings or results are displayed could affect how stakeholders understand the data (Kulkarni, 2016).

Data Security

At all stages of data collection, all information that could identify the participants was protected. Data was stored securely, and only the researcher had access to records. Data was stored on dedicated password-protected external drives. When not being utilized, the external drive was stored in a dedicated combination house safe located at The Academic Partnership, LLC offices. The data will be retained for a minimum period of five years after completing this research study.

Data Analysis

This quasi-experimental nonequivalent control-group study examined the likelihood of influencing the independent variables of teacher credentials and the act learner profiling may have on student achievement. The researcher measured four factors: teachers who are credentialed and consistently engage in learner profiling, teachers who are credentialed and do not engage in learner profiling, teachers who are not credentialed and consistently engage in learner profiling, and teachers who are not credentialed and do not engage in learner profiling. The PIRLS assessment was the instrument used to measure the dependent variable of student achievement. The first hypothesis tests the main effect of PIRLS achievement scores of students whose teachers are credentialed and non-credentialed. The second hypothesis examines learner profiling implementation's primary effect on student achievement. Lastly, the third hypothesis assesses the interaction of teacher credentials and learner profiling on student achievement. Each hypothesis was measured using a two-way ANCOVA test. The two-way ANCOVA test will provide the F scores, degrees of freedom, and critical values so a determination to reject or fail to reject the null hypothesis can be made (Gall et al., 2007; Longstreet, 2013).

Researchers use a two-way ANCOVA when two categorical independent variables, one continuous dependent variable, and one continuous covariate exist in an investigation (Mishra et al., 2019). Furthermore, the two-way ANCOVA controls differences within or between groups when comparisons are made (Gall et al., 2007). When using a pretest comparing the means of two or more independent variables, the two-way ANCOVA is an appropriate test of analysis (Warner, 2013). The total number of student participants who completed a sample PIRLS assessment (n = 160) exceeded the required minimum of 144 when assuming a medium effect size with a statistical power of 0.7 at the 0.05 alpha levels for the four groups (Gall et al., 2007).

The researcher inspected all data entries for inaccuracies, completion, and missing data. Missing data was excluded using the list-wise technique under the assumption that the missing data was a random occurrence (Patel et al., 2021; Peugh & Enders, 2004). The assumptions of normality and homogeneity of variance must be met when using a two-way ANCOVA (Gall et al., 2007). The ANCOVA requires that a Box and Whisker plot be used to identify any extreme outliers (Warner, 2013). The Kolmogorov-Smirnov test for normality was used because the sample size was greater than 50 (Warner, 2013). The assumption of linearity was determined using a series of scatter plots between the pretest and post-test variables for each of the four groups. A series of scatter plots between the pretest and post-test variables for each group determined the assumption of bivariate normal distribution. The assumption of homogeneity of slopes must be met to discover interactions. The assumption of equal variance was examined using Levene's test of equality of error variances. The test looked for violations of the homogeneity variance assumption between and regarding the interactions of teacher credentials and learning profiling (Gall et al., 2007).

The PIRLS assessment measured the dependent variable at a ratio scale because any two points are the same, and there is a true zero point (Gall et al., 2007). All groups consist of

different participants, which means the assumption of independence was met (Warner, 2013). The effect size was reported using the eta-squared statistic and interpreted by Cohen's *d*, and the null hypothesis will be rejected at the 95% confidence level with $\alpha = .05$ (Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

This study's primary purpose was to explore and determine whether teachers' credentials and the pedagogical approach of learner profiling interact in ways that have a meaningful impact on student achievement. A quantitative, quasi-experimental nonequivalent control-group design was the method dispatched to observe participants in their natural learning environment. After analyzing the results of the participants' PIRLS reading scores, this chapter details the researcher's findings using a two-way ANCOVA and a two-way ANOVA statistical test. Based on the results from the ANOVA, an independent samples *t* test was deployed to determine whether the means between credentialing and learner profiling groups were statistically significantly different. A review of the research questions, null hypotheses, descriptive statistics, test assumptions, and other statistical results are provided to offer insight into whether the two independent variables had any significant relationship with the dependent variable.

Research Question

RQ1: Is there a difference in PIRLS achievement scores of students whose teachers are credentialed or non-credentialed and those who have been trained in the implementation of learning profiling or who have not been trained?

Null Hypotheses

$H_0$1: There is no difference in PIRLS achievement scores of students whose teachers are credentialed and non-credentialed.

$H_0$2: There is no difference in PIRLS achievement scores of students whose teachers have been trained or have not been trained to implement learning profiling.

$H_0$3: There is no difference among PIRLS achievement scores among students whose teachers have been trained or have not been trained to implement learning profiling based on their teacher's credential status.

Descriptive Statistics

The study included four groups of teachers who were identified and placed into either credentialed and learner profiling, credentialed and not learner profiling, not credentialed and learner profiling, and not credentialed and not learner profiling groups. Each group consisted of 40 fourth graders studying academic English in international schools in Riyadh, KSA. A total of 160 fourth graders completed both the PIRLS pretests and posttests.

Two-way ANOVA

The unweighted marginal means of "PIRLS student achievement" scores were determined for credentialed learner profiling (M = 65.18 ±, SD = 22.07), credentialed non-learner profiling (M = 62.15 ±, SD = 25.56), non-credentialed learner profiling (M = 60.45 ±, SD = 26.51), and non-credentialed non-learner profiling teachers (M = 59.25 ±, SD = 24.55) (see Table 1).

Table 1

Means and Standard Deviations of PIRLS Score

Descriptive Statistics

Dependent Variable: TT credentialing status	Student achievement PIRLS Learner profiling status	*M*	*SD*	*N*
License TTs	Learner Profiling TTs	65.175	22.070	40
	Non-Learner Profiling TTs	62.150	25.565	40
	Total	63.663	23.778	80
Non-License TTs	Learner Profiling TTs	60.450	26.512	40
	Non-Learner Profiling TTs	59.250	24.552	40

	Total	59.850	25.396	80
Total	Learner Profiling TTs	62.813	24.354	80
	Non-Learner Profiling TTs	60.700	24.947	80
	Total	61.756	24.597	160

Independent Samples *t*-Test

Credentialed Teachers Group. The paired sample mean for licensed teachers was *M* = 63.66, *SD* = 23.79, while the mean for non-licensed teachers was *M* = 59.40, *SD* = 26.10 (see Table 2).

Table 2

Means and Standard Deviations for Credentialed Teachers Status Groups

Group Statistics

	TT credentialing status	*N*	*M*	*SD*	Std. Error Mean
4th Grade PIRLS scores	Licensed TTs	80	63.6625	23.77848	2.65852
	Not Licensed TTs	80	59.4000	26.09700	2.91773

Note. TTs = Teachers

Learner Profiling Group. The paired sample mean for learner profiling teachers was *M* = 62.81, *SD* = 24.35 and the mean for non-learner profiling teachers was *M* = 60.70, *SD* = 24.95 (see Table 3).

Table 3

Means and Standard Deviations for Learning Profiling Status Groups

Group Statistics

	TT Learner Profiling Status	N	*M*	*SD*	Std. Error Mean
4th Grade PIRLS scores	Learner Profiling TTs	80	62.8125	24.35346	2.72280
LP status	Non-Learner Profiling TTs	80	60.7000	24.94724	2.78919

Note. TTs = Teachers

Assumptions

Two-way ANCOVA

Initially, a two-way ANCOVA was performed to observe the effects of teacher credentials and learner profiling on student achievement relating to PIRLS scores. There was a linear relationship between initial PIRLS pretest and PIRLS posttest scores for each group, as assessed by visual inspection of the scatterplot (see Figure 1). However, the assumption for homogeneity of regression slopes was violated, which means there was a statistically significant interaction term, $F(3, 152) = 19.574$, $p = < .001$ (see Table 4). As a result, it was determined that the most appropriate test to measure the effects of teacher credentials and learner profiling on student achievement would be a two-way ANOVA.

Figure 1

Scatter Plots of Credentialed Intervention Groups

Scatter Plot of PIRLS scores (student achievement) by PIRLS Pretest by Credentialed intervention (two Groups) by Learner profiling intervention (two groups)
Credentialed intervention (two groups)

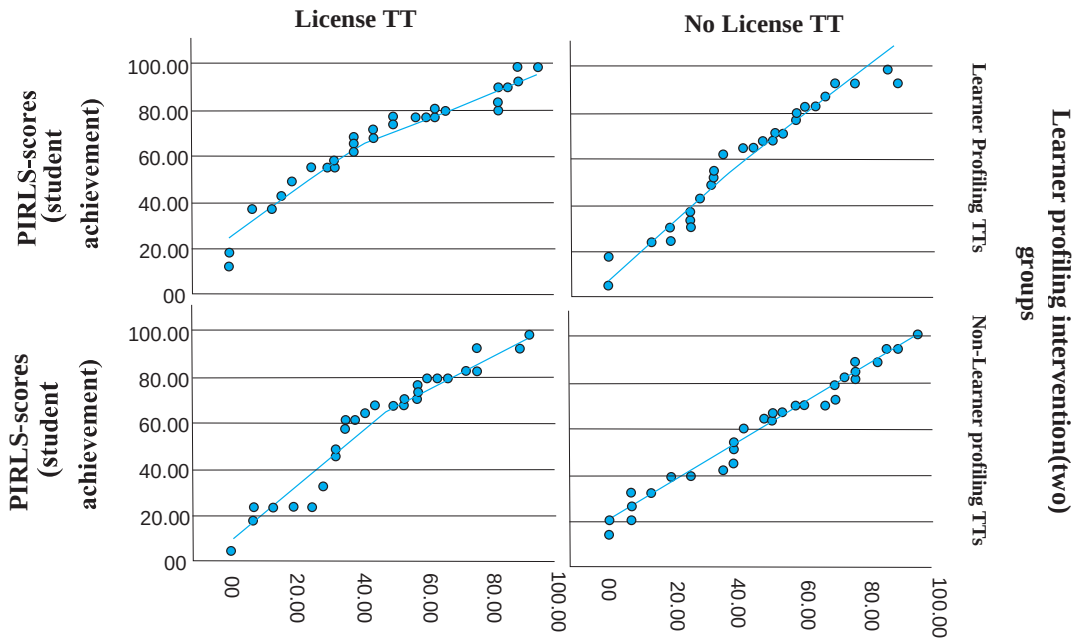


Table 4

Homogeneity of Regression Slopes Interaction

Tests of Between-Subjects Effects

Dependent Variable: PIRLS scores (student achievement)

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	91282.582[a]	7	13040.369	362.646	.000
Intercept	6470.882	1	6470.882	179.952	.000
groups	2119.949	3	706.650	19.652	.000
Pretest_Scores	90261.903	1	90261.903	2510.137	.000
groups * Pretest_Scores	2111.545	3	703.848	19.574	.000
Error	5465.761	152	35.959		
Total	706221.000	160			
Corrected Total	96748.344	159			

a. R Squared = .944 (Adjusted R Squared = .941)

Two-way ANOVA

A two-way ANOVA was conducted to examine the effects of teacher credentials and learner profiling on student achievement relating to PIRLS scores. Residual analysis was performed to test for the assumptions of the two-way ANOVA. Outliers were assessed by inspection of a boxplot (see Figures 2, 3, 4 and 5); normality was assessed using Kolmogorov-Smirnov's normality test for each cell of the design (see Table 5). Homogeneity of variances was assessed by Levene's test. There were no outliers, and there was homogeneity of variances (p = .455) (see Table 6). Data were normally distributed for both licensed teachers who learner profile and non-licensed teachers who did not learner profile, but the data were not normally distributed for licensed who did not learner profile and non-licensed teachers who did learner profile as assessed by Kolmogorov-Smirnov.

Figure 2

Boxplot Inspection for Outliers: Licensed Teachers, Learner Profiling Group

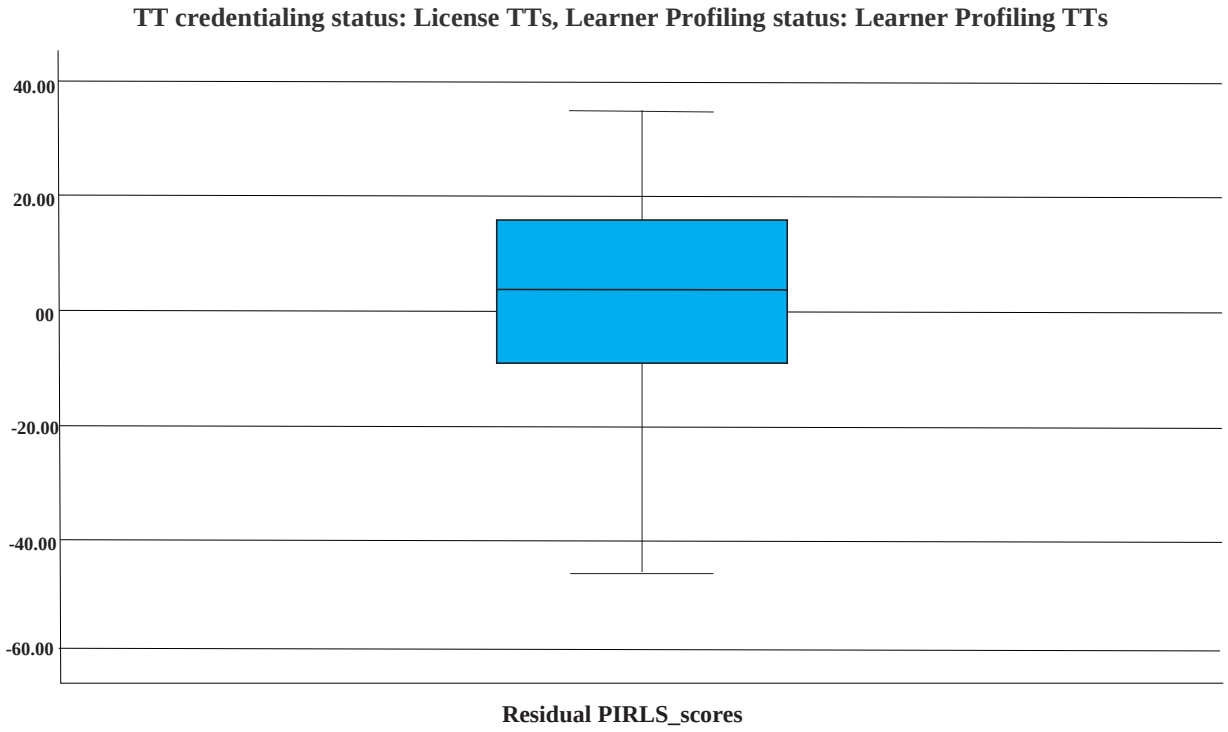


Figure 3

Boxplot Inspection for Outliers: Licensed Teachers, Non-Learner Profiling Group

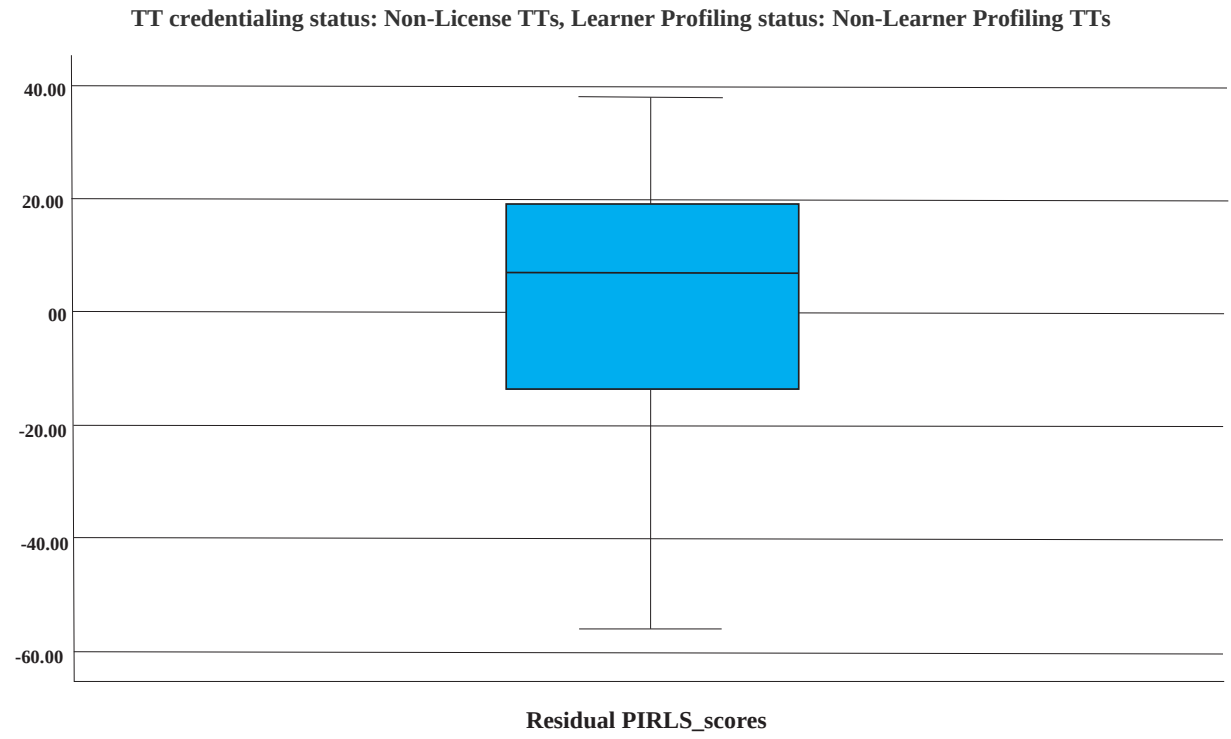


Figure 4

Boxplot Inspection for Outliers: Non-Licensed Teachers, Learner Profiling Group

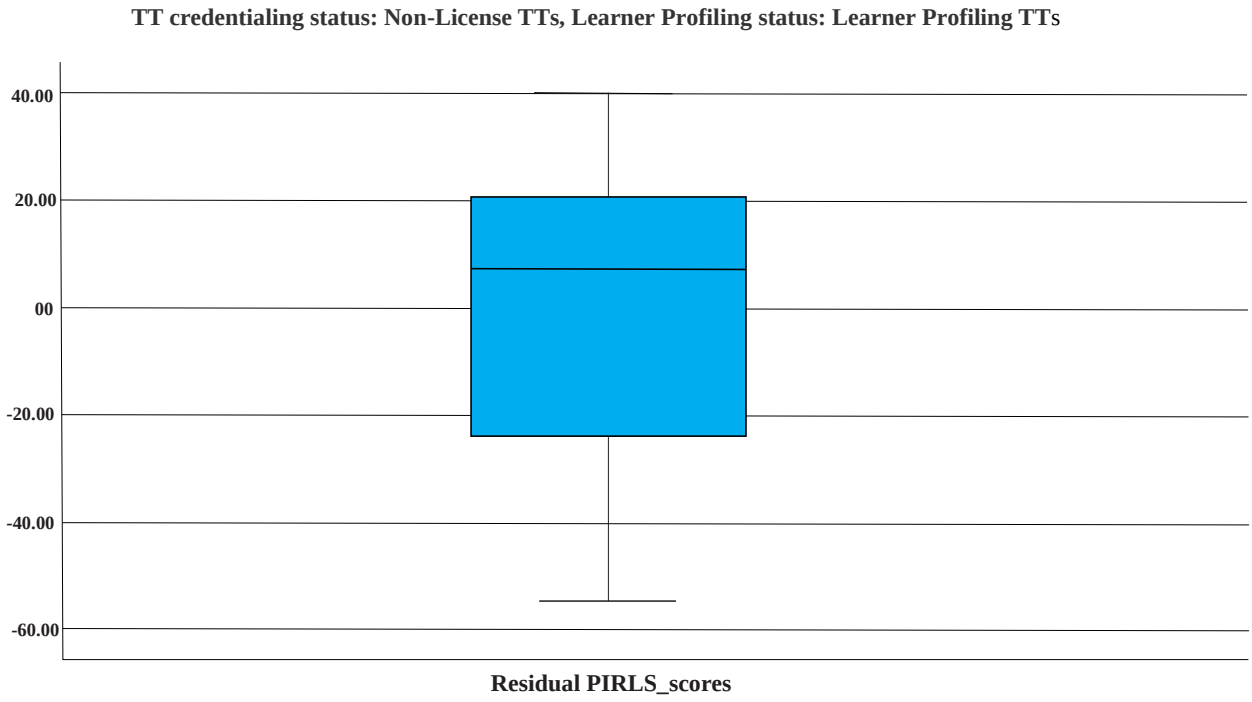


Figure 5

Boxplot Inspection for Outliers: Non-Licensed Teachers, Non-Learner Profiling Group

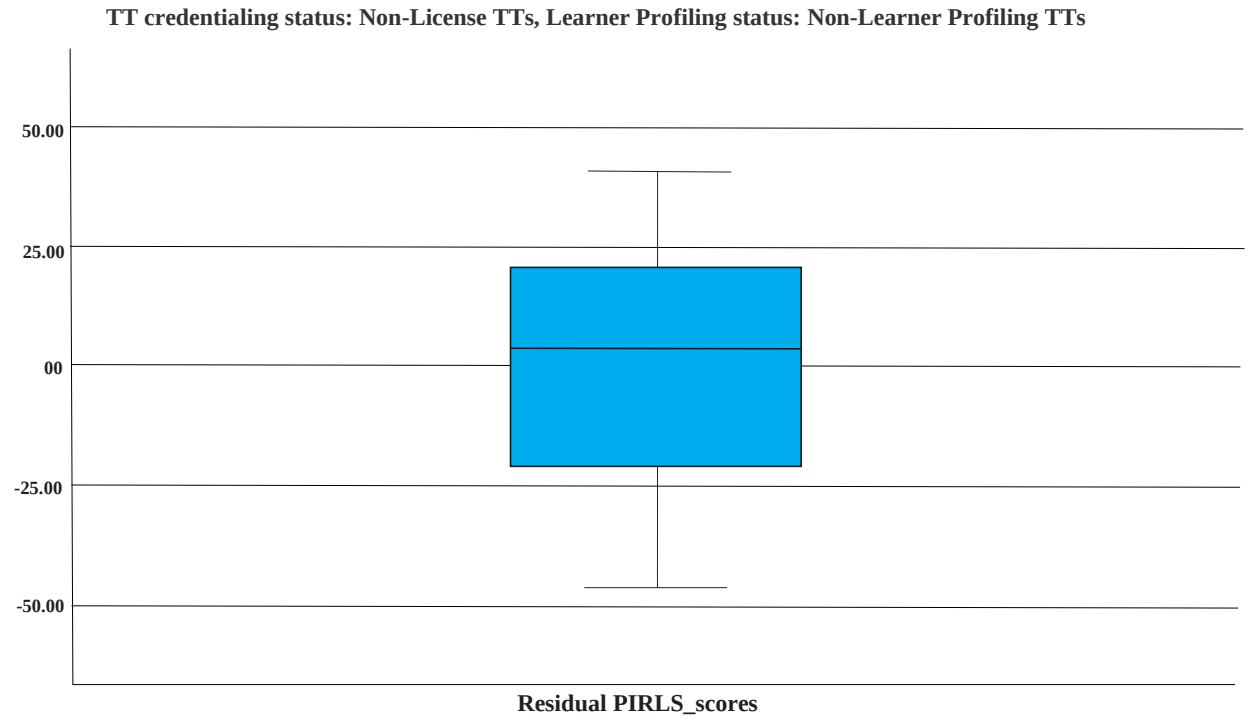


Table 5

Kolmogorov-Smirnov Findings for Test of Normality

Tests of Normality

TT credentialing status	Learner profiling status		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	*df*	Sig.	Statistic	*df*	Sig.
License TTs	Learner Profiling TTs	Residual for PIRLS_scores	.119	40	.156	.935	40	.023
	Non-Learner Profiling TTs	Residual for PIRLS_scores	.163	40	.009	.918	40	.007
Non License TTs	Learner-Profiling TTs	Residual for PIRLS_scores	.158	40	.013	.935	40	.023
	Non-Learner Profiling TTs	Residual for PIRLS_scores	.136	40	.061	.954	40	.103

a. Lilliefors Significance Correction

Table 6

Homogeneity of variances: Levene's Test of Equality Teacher Credentials

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	*df1*	*df2*	Sig.
Student achievement PIRLS	Based on Mean	.875	3	156	.455
	Based on Median	.489	3	156	.690
	Based on Median and with adjusted *df*	.489	3	150.985	.690
	Based on trimmed mean	.808	3	156	.491

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: Student achievement PIRLS

b. Design: Intercept + Credentials + Learner profiling + Credentials * Learner profiling

Independent Samples *t*-Test

Credentialed Teachers' Group

An independent-samples *t*-test was used to determine whether there was a statistically significant mean difference between the fourth-grade PIRLS scores of licensed and non-licensed teachers. There were no outliers in the data, as assessed by the inspection of a boxplot (see Figure 6). The assumption of normality was violated, as assessed by the Kolmogorov-Smirnov test (p = < .001) (see Table 7). However, the test was able to be continued because the independent samples *t test* is robust to violations of normality with respect to Type I error (Laerds, 2017). Furthermore, the sample size in the present study was greater than 50, so a visual inspection of the Normal Q-Q Plot concluded that the difference scores for licensed teachers and non-licensed teachers were normally distributed (see Figure 7). There was homogeneity of variances, as assessed by Levene's test for equality of variances (p = .183) (see Table 11).

Figure 6

Boxplot Inspection for Outliers: Credentialed Teachers Status Group

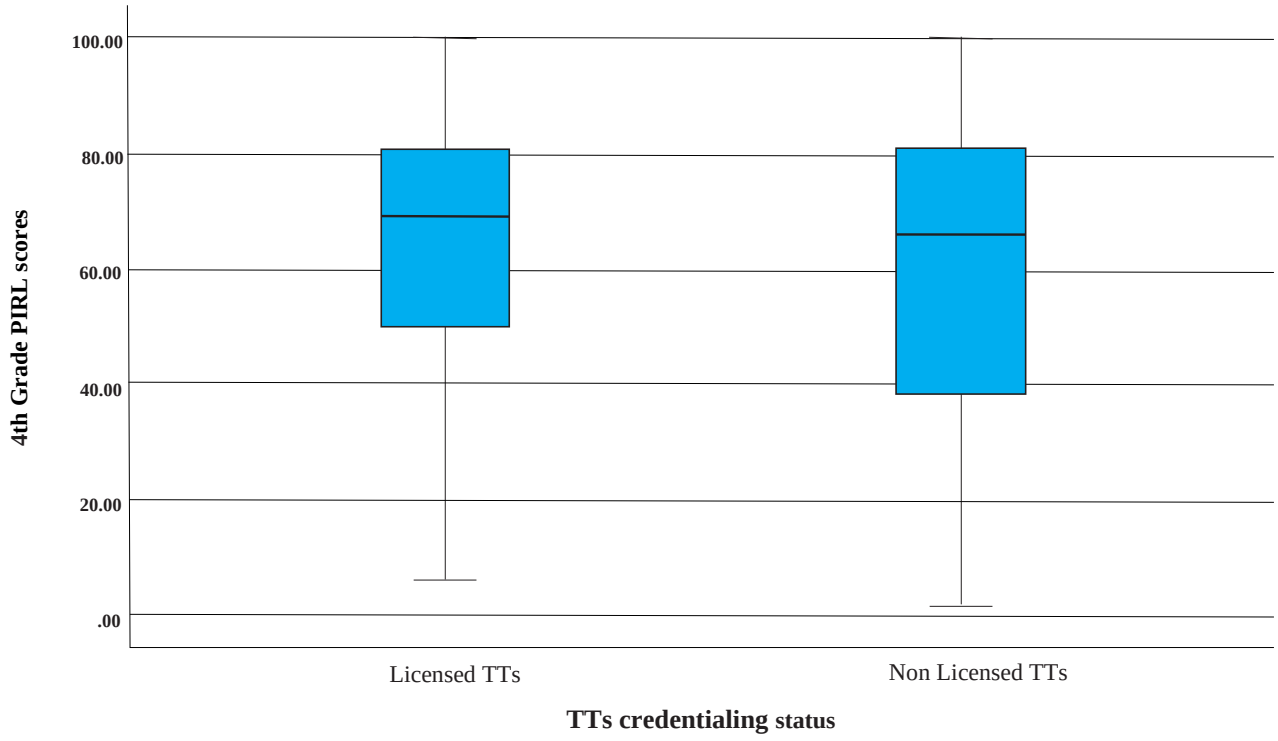


Table 7

Test of Normality: Credentialed Teachers Status Group

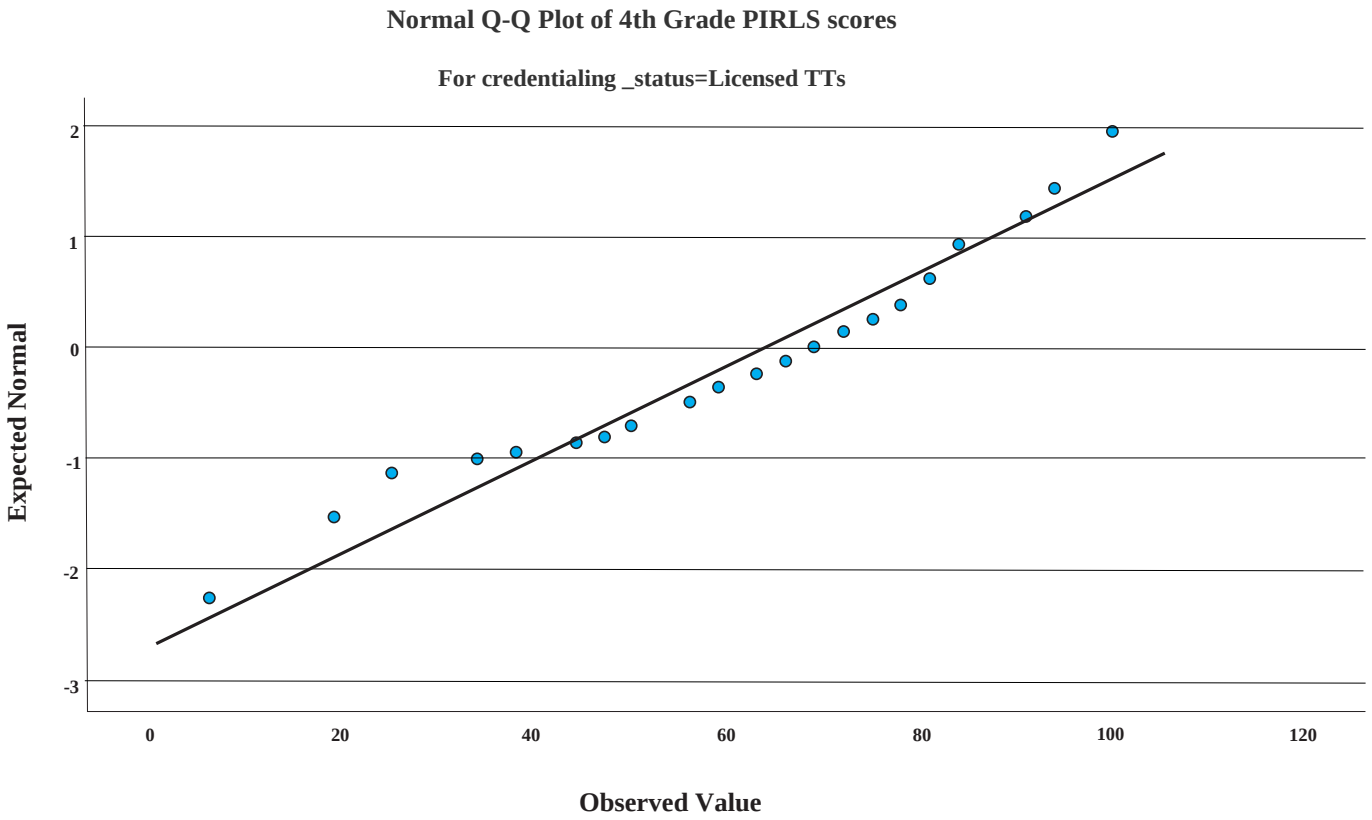
Tests of Normality

	TT credentialing status	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
4th Grade PIRLS scores	Licensed TTs	.114	80	.012	.930	80	.000
	Not Licensed TTs	.142	80	.000	.947	80	.002

a. Lilliefors Significance Correction

Figure 7

Normal Q-Q Plot for Credentialing Status Groups



Learner Profiling Teachers' Group

An independent-samples *t* test was used to determine whether there was a statistically significant mean difference between the fourth-grade PIRLS scores of licensed and non-licensed teachers. There were no outliers in the data, as assessed by the inspection of a boxplot (See Figure 8). Inspection of their values did not reveal them to be extreme, and they were kept in the analysis. The assumption of normality was violated, as assessed by the Kolmogorov-Smirnov test (p = < .001) (see Table 8). However, the test was able to be continued because the independent sampled *t-test* is robust to violations of normality with respect to Type I error (Laerds, 2017). Just as in the credentialing independent-samples *t* test, the same size was greater than 50. Therefore, a visual inspection of the Normal Q-Q Plot determined the difference learner profiling scores of teachers who learner profiles and does not learner profile were normally distributed (see Figure 9). There was homogeneity of variances as assessed by Levene's test for equality of variances (p = .686) (see Table 12).

Figure 8

Boxplot Inspection: Learner Profiling Teachers Status Group

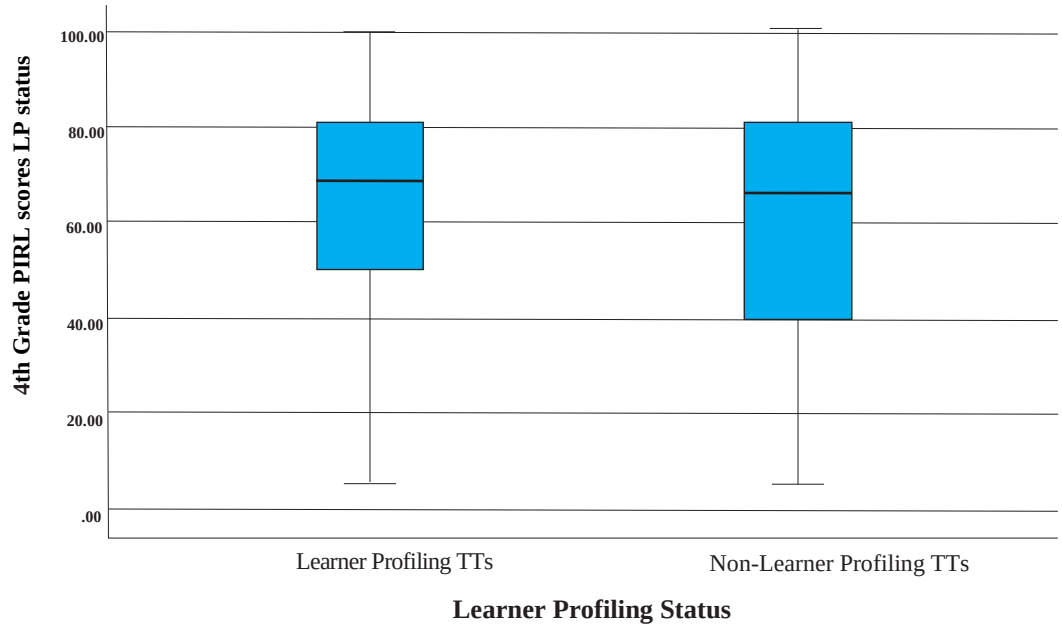


Table 8

Test of Normality: Learner Profiling Teachers Status Group

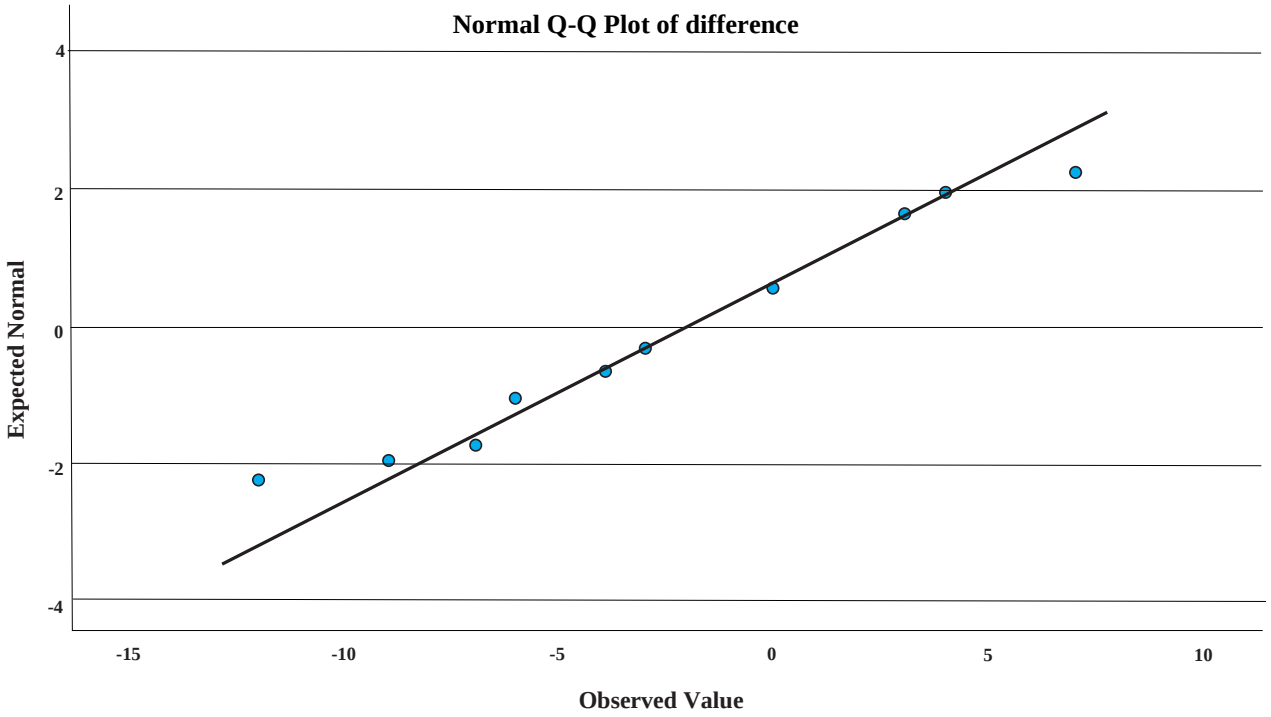
Tests of Normality

	TT Learner Profiling Status	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
4th Grade PIRLS scores LP status	Learner Profiling TTs	.127	80	.003	.942	80	.001
	Non-Learner Profiling TTs	.149	80	.000	.942	80	.001

a. Lilliefors Significance Correction

Figure 9

Normal Q-Q Plot for Learner Profiling Status Groups



Results

After the two-way ANCOVA's assumption of regression of slopes was violated, a two-way ANOVA was conducted to analyze the interaction effect between the independent and dependent variables without adjusting for pretest scores. The researcher conducted three statistical tests to determine the relationship teachers' credentials and learner profiling have on student achievement. The researcher noticed the mean difference between the four participant groups and the group order of those results. The observation compelled the researcher to analyze the data further through a paired-sample *t* test to determine whether a mean difference existed between two different participant groups.

Hypotheses

The two-way ANOVA was used to examine the null hypothesis of teachers' credentials, and the act of learner profiling did not interact in a manner that would suggest that both factors affected fourth graders' PIRLS achievement scores. The interaction effect between teacher credentials and teacher learner profiling adherence on PIRLS student achievement scores was not statistically significant, $F(1, 156) = .054$, $p = .816$ partial $\eta^2 = .000$ (see Table 9). Therefore, an analysis of the main effect for teacher credentials was performed, which indicated that the main effect was not statistically significant, $F(1, 156) = .951$, $p = .331$, partial $\eta^2 = .006$ (see Table 9). The analysis of the main effect for learner profiling was also observed, and this finding also indicated the main effect was not statistically significant, $F(1, 156) = .292$, $p = .590$, partial $\eta^2 = .002$ (see Table 9). All pairwise comparisons were run with 95% confidence intervals, and *p*-values are Bonferroni adjusted. Based on these results, null hypothesis $H_0 3$ cannot be rejected.

Table 9

Two-Way ANOVA Independent Variables Interaction Effects

Tests of Between-Subjects Effects

Dependent Variable: Student achievement PIRLS

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected Model	793.219[a]	3	264.406	.432	.730	.008
Intercept	610213.506	1	610213.506	997.768	.000	.865
Credentials	581.406	1	581.406	.951	.331	.006
Learner_profiling	178.506	1	178.506	.292	.590	.002
Credentials * Learner_profiling	33.306	1	33.306	.054	.816	.000
Error	95406.275	156	611.579			
Total	706413.000	160				
Corrected Total	96199.494	159				

a. R Squared = .008 (Adjusted R Squared = -.011)

Table 10

Independent Variables Means and Confidence Intervals

TT credentialing status * Learner profiling status

Dependent Variable: Student achievement PIRLS

TT credentialing status	Learner profiling status	*M*	*SEM*	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
License TTs	Learner Profiling TTs	65.175	3.910	57.451	72.899
	Non-Learner Profiling TTs	62.150	3.910	54.426	69.874
Non-License TTs	Learner Profiling TTs	60.450	3.910	52.726	68.174
	Non-Learner Profiling TTs	59.250	3.910	51.526	66.974

Figure 10

Estimated Means of Learner Profiling Status

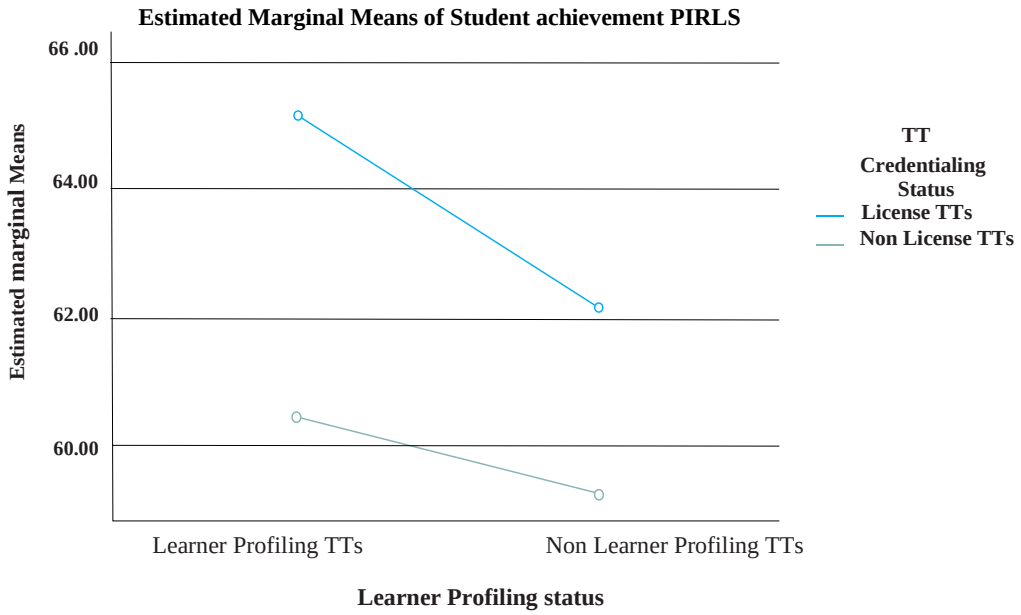
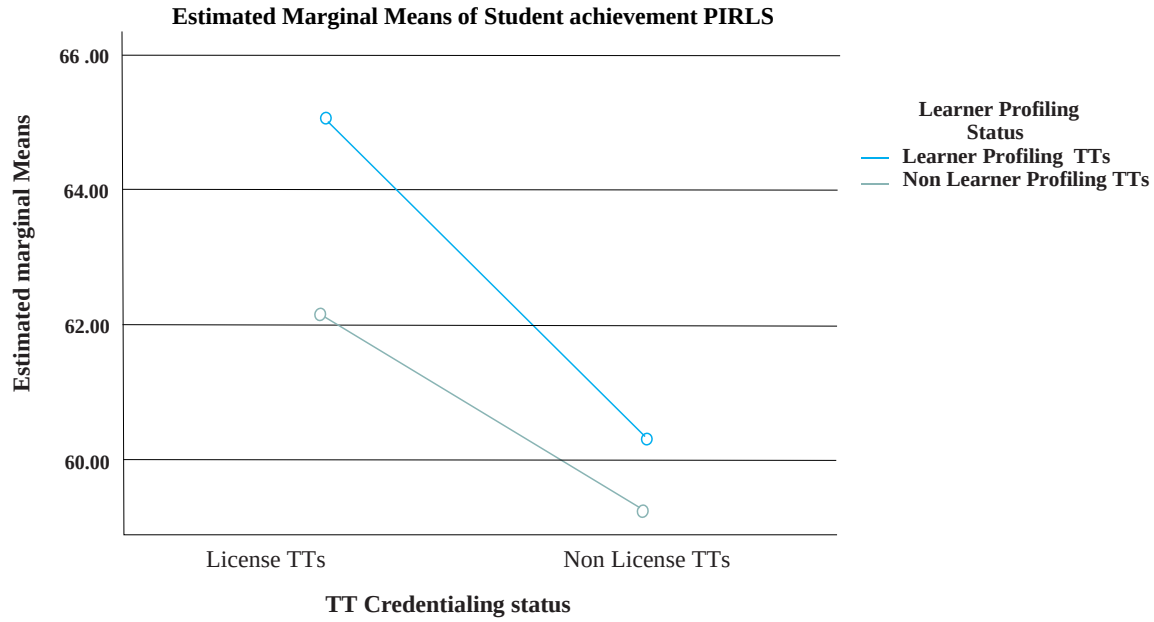


Figure 11

Estimated Means of Credentialing Status



Independent-samples *t Test*

Credentialed teachers' group

The independent-samples *t test* was used to determine the null hypothesis ($H_0$1) that the difference between the population means of teacher credentialing on PIRLS achievement score is zero. Licensed teachers (*M* = 63.66, *SD* = 23.78) outperformed teachers who are not licensed (*M* = 59.40, *SD* = 26.10) resulting in a statistical mean result of 4.26, 95% CI [-3.53 to 12.06], *t*(158) = 1.08, *p* = .282 (see Table 11). The mean difference was not statistically significantly different from zero. Therefore, we must fail to reject the null hypothesis.

Table 11

Teacher Credentials: Independent Samples Test Mean Difference Results

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
4th Grade PIRLS scores	Equal variances assumed	1.789	.183	1.080	158	.282	4.26250	3.94726	-3.53370	12.05870
	Equal variances not assumed			1.080	156.652	.282	4.26250	3.94726	-3.53422	12.05922

Learner profiling teachers' group

The paired-samples *t* test was used to determine the null hypothesis ($H_0$2) that the difference between the population means of teacher learner profiling on PIRLS achievement scores is zero. Teachers who learner profile (*M* = 62.81, *SD* = 24.35) outperformed teachers who

did not learner profile (*M* = 60.70, *SD* = 24.95) resulting in a statistical mean result of 2.11, 95% CI [-559 to 981] *t*(158) = .542, *p* = .589 (see Table 12). The mean difference was not statistically significantly different from zero. Therefore, we must fail to reject the null hypothesis.

Table 12

Learner Profiling Status Group's Means, Standard Deviation and Significance

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
4th Grade PIRLS scores LP status	Equal variances assumed	.164	.686	.542	158	.589	2.11250	3.89784	-5.58610	9.81110
	Equal variances not assumed			.542	157.908	.589	2.11250	3.89784	-5.58614	9.81114

CHAPTER FIVE: CONCLUSIONS

Overview

This chapter includes a detailed discussion of the results found in the previous chapter concerning several aspects of the research question. Specifically, the chapter discusses the significance of teacher licensing and learner profiling and how these factors impact student participants' PIRLS achievement scores. The primary purpose of this study was to establish if an interaction between teacher licensing and learner profiling impacted student achievement. This study also observed if differences existed between the factor groups. As a result of the research's procedures, instrumentation, and statistical results, implications, limitations, and opportunities for future research are thoroughly explored.

Discussion

This study aimed to determine whether teacher credentials and the pedagogical act of learner profiling meaningfully support academic achievement. This study utilized the PIRLS reading assessment, an international test that measures fourth-grade reading achievement. Schools participate in the PIRLS assessments to provide insight into nations and schools' academic climate and teacher practices. The study's teacher and student participants represented four different Saudi Arabian international schools' typical fourth-grade teaching and learning experiences. The researcher placed teacher participants in one of four groups representing their licensure status and use of learner profiling during instruction. Teachers proctored a pretest and post-test of a PIRLS assessment over five weeks. During those five weeks, teachers who indicated they were more likely to learner profile received a four-week treatment on learner profiling best practices.

Licensure Significance

This study's research question seeks to explore three essential elements paramount to

providing insight on teacher recruitment and best teaching practices. The first element that the research question addresses is the impact teacher credentials have on student achievement. Teacher shortages have plagued the education sector worldwide for decades, and many school districts are seeking alternative methods to licensure to fill human capital deficiencies (Goldhaber et al., 2020). Some states grant provisional licenses for several years while simultaneously reducing the requirements for full licensure to individuals who did not complete or failed to a complete rigorous licensure process (Maryland State Department of Education, 2022). Seftor and Mayer's (2003) US Department of Education report revealed that student mathematics achievement fell when unlicensed teachers taught. In fact, low-quality teachers are often identified as teachers who do not possess a teacher's license, and the literature confirms that these teachers produce lower test scores and overall academic achievement than their licensed counterparts (Allen & Sims, 2018). The findings from this study are consistent with the literature as all the licensed teachers' groups (M = 62.81, SD = 24.35) had a better impact on student achievement as opposed to the non-licensed teacher groups (M = 59.85, SD = 25.39). Although the results from both independent samples *t test* were not statistically significant, the findings reflect the Saudi Arabian students' low performance on the PIRLS assessment while also determining that teacher credentials and learner profiling does have a positive impact on students' academic performance.

Highly qualified teachers are educators who meet the requirements and standards set by, in the case of the United States, a state's department of education and local school boards or their ministries of education for many countries. These educators, in most cases, have taken the required post-secondary courses, completed a teacher internship or practice, and successfully passed a required exanimation such as the PRAXIS. Ample research on this subject confirms the impact of highly qualified teachers on student achievement. For instance, Lee (2018) supports

the notion that there is a significant positive relationship between credentialed teachers and learners' short- and long-term academic success. Graham and Flamini (2021) concluded a clear relationship between schools with higher percentages of highly qualified teachers and students' cognitive and non-cognitive academic-related achievements. A study observing the impact teachers had on math achievement found that teachers' subject-matter expertise was the most significant factor in promoting student achievement in mathematics, superseding years of experience and advanced degree attainment (Lee & Lee, 2020). Ríordáin et al.'s (2021) findings support the previously mentioned study and highlight the reality that teacher subject knowledge must be specific to the subject content and students' academic level. In other words, teachers must have the instructional skills to teach the content based on learners' abilities and capacity.

Furthermore, this study's results are consistent with the literature and mirror the findings of previous official PIRLS scores. A review of the 2016 official PIRLS scores reveals that Saudi Arabian PIRLS test-takers scored a mean of 63% (IEA, 2022). The student participants in this study were given the same 2016 version of the PIRLS test, which means the licensed teachers' group results were the same as the official 2016 scores. Also, it must be noted that the PIRLS assessment is both a valid and reliable large-scale assessment (Schult & Sparfeldt, 2018; Sparfeldt et al., 2012). The outcome of this study confirms the reliability of the PIRLS assessment.

As schools worldwide experience a decrease in student achievement, countries must promote the recruitment of highly qualified teachers. Saudi Arabian schools have consistently performed poorly on international assessments such as PIRLS, TIMMS, and PISA (Ali, 2020; IEA, 2022; Kell & Kell, 2014). One of the key reasons for this underperformance is the lack of qualified teachers that engage learners in the Kingdom. Saudi Arabian schools consist of three sectors: public, private, and international. The public schools and universities in KSA have

struggled to introduce national standards for teacher licensing and continuous education (Alsowat, 2021). Private and international schools often employ expatriates as teachers who do not possess at least a bachelor's degree or are not degreed in the content areas in which they teach (Ahmad, 2015). Schools often make these hiring decisions to fill immediate vacancies and reduce payroll expenses. Al-Seghayer (2014) notes that schools in Saudi Arabia lack good teacher preparation programs, and many teachers do not utilize the best teaching methods to engage learners. The results from this study's two-way ANOVA analysis revealed that the highly qualified teacher groups, regardless of their learner profiling deployment, performed better than the teachers who were not licensed, which supports the literature regarding the impact teacher credentialing has on student achievement.

Countries that consistently excel in international achievement assessments like the PIRLS often have well-established and effective credentialing processes, teacher preparation, and professional development programs. The Russian Federation, Hong Kong, Singapore, Ireland, Northern Ireland, and Poland have scored in the top percentile on the PIRLS for several testing cycles. These nations' educational systems are encultured through rigorous teacher preparation, credentialing, and continuous education requirements. Post-Soviet Russian reforms drastically transformed Russian teacher training programs into a diverse experience of interdisciplinary courses, pedagogical training, and teacher internships (Kalimullin & Valeeva, 2022). NIE, a teacher training institute housed on the Nanyang Technological University's campus, hosts Singapore's only teacher pre-service program. Teacher candidates are employees of the country's Ministry of Education and benefit from the direct engagement of the V3SK model, which represents a focus on values, skills, and knowledge (Low, 2021). Singapore's PIRLS success may be connected to their acknowledgment that literacy is a fundamental asset to lifelong learning and skills acquisition (Low, 2021). Since 2012, Ireland has implemented

targeted professional development programs that specifically target *out-of-field* teachers so these educators can implement sound instructional practices that are appropriate for not only the subject matter but also the academic level (Faulkner et al., 2019). The ongoing theme between these countries is the acknowledgment that teachers must be properly equipped to provide quality instruction to learners.

Countries that are top performers on the PIRLS also share specific qualities that promote academic excellence, such as early childhood development programs, positive parental engagement, school resources, hiring highly qualified teachers, and a commitment to educator continuous improvement (Marôco, 2020). For example, Hong Kong's Teaching and Learning Quality Process Review (TLQPR) has received international recognition as one of few measurements that assess student achievement through a pedagogical lens (Beerkens, 2018). The TLQRP focuses on quality of instruction that begs educators to consider every aspect of the teaching and learning process to meet desired outcomes (Beerkens, 2018). Marôco (2020) supports the idea that quality instruction is a critical factor by noting that the Russian Federation and Singaporean educators spend considerable time focusing on silent individual reading and reading instruction, such as decoding word strategies. Like the Russian Federation, Poland went through several educational reforms after the end of communist rule in 1989. These reforms catapult Poland from low performing to Europe's highest performance in international assessments (Jakubowski, 2021). Poland's student achievement accomplishments stem from its 2008 educational reform focused on student expected outcomes, cross-curricular learning, evidence-based learning, and overall teacher autonomy (Jakubowski, 2021).

Unfortunately, Saudi Arabia has not exhibited the qualities that could propel the oil-rich nation to improve schools and therefore promote higher student achievement. The examples of Singapore, Poland, and the Russian Federation have demonstrated that they are committed to

establishing and maintaining education systems that reflect their nations' wants, needs, and expectations. Saudi Arabia has made efforts to reform its education sector even before the Saudi Vision 2030 mandate (Allmnakrah & Evers, 2020). However, school leaders have not been able to develop specific learning goals and expected outcomes, so political leaders and educators cannot benchmark progress (Mishrif & Alabduljabbar, 2018). This inability to correctly measure academic development may stem from the reality that there is a lack of effort within the system to enhance critical thinking amongst Saudi educators (Allmnakrah & Evers, 2020). First-year teachers often leave Saudi teaching colleges feeling unprepared and unconfident due to the limited pedagogical and methodological scope these institutions provide (Alhamad, 2018). As a result, international schools and private national schools flood Saudi communities as better alternatives to public education. However, these ventures' administrators and teachers are often not credentialed (Aburizaizah et al., 2016), and these academic alternatives do not necessarily provide learners with a better education than public schools (Walker, 2016). The final product of not correctly preparing teachers and establishing educational standards is low student academic achievement on international assessments.

Learner Profiling as a Method

This study's research question also explored the value of learner profiling as a method to increase student achievement. Educators often associate learner profiling with differentiated instruction. Tomlinson et al. (2003) believe that differentiation cannot occur until students are ready and interested and their profile has been considered. However, teachers can implement learner profiling strategies outside of differentiation to engage learners. Learner profiling is about instructional efficiency (Tomlinson, 2017; Tomlinson et al., 2003). Teacher awareness of students' learning preferences can offer essential data so teachers can provide effective and efficient instruction to learners in individual, small group, or whole group scenarios (Tomlinson,

2017). In this study the researcher attempted to determine whether there was an interaction between teacher credentialing and learner profiling. First, a two-way ANCOVA was conducted, but the assumption of homogeneity of regression of slopes was violated, meaning this statistical test was not appropriate given the data. Therefore, the researcher used a two-way ANOVA to determine if an interaction existed without controlling for the PIRLS pretest scores. The results from the two-way ANOVA revealed that no significant interaction existed between teacher credentials and learner profiling.

Results from an independent-samples *t tests* also revealed a difference in PIRLS scores that were not statistically significant between the teachers who were trained in learner profiling and the teachers who were not trained, but the teachers who were trained in learner profiling outperformed the non-learner profiling teachers by a mean difference of 2.11. In other words, teachers who considered students' learning preferences and needs outperformed teachers who used a more teacher-centered approach to instruction. Ng's (2009) study regarding profiling university students' essay writing perceptions and goal setting revealed that students who desire to master writing and set goals to that effect perform better than students who communicated that they were less motivated and therefore set lower performance goals. Ultimately, teachers who provide appropriate instruction and support based on their students' perceptions and goals are more likely to help students increase their academic performance (Valiandes & Neophytou, 2018). Theis et al. (2020) research confirm monitoring students' needs as an essential teacher practice to create learning environments that promote efficacy and mastery goals, leading to increased academic performance.

The lack of statistically significant interaction between teacher credentials and learner profiling does not mean there is no interaction between the two factors (Laerd Statistics, 2022). As mentioned throughout this narrative, credentialed teachers have proven through a vetted

process that they have the knowledge and basic skill set to engage learners effectively. When qualified teachers actively engage student learning preferences and perceptions, learners are more likely to experience academic success. Lu and Throssell (2018) concluded that teachers who could provide a relaxed and informal learning environment while engaging students with appropriate instruction based on student learning preferences were more likely to help Chinese English learners become self-regulated. Self-regulation is a crucial component of student academic achievement (Huh & Reigeluth, 2017). A study exploring the link between specialist English language teachers and perceptions on professional status found that highly qualified teachers engage learners by focusing on individual student needs (Haworth, 2018). These teachers utilize various ongoing learner profiling methods, allowing these educators to make effective data-driven decisions.

Learner profiling primarily concerns educators making data-driven decisions that accelerate learners' ability to become autonomous. The present study results suggest that teacher credentials are essential to promoting student achievement. However, it must be noted that learner profiling is embedded in the fabric of being a highly qualified teacher. Effective teachers notice learners' nuances and needs within whole-class learning environments. They can respond with actions that will endorse the teaching and learning up for students in individual, small group, or whole-class learning configurations (Tomlinson, 2017). König et al. (2020) discovered a correlation between general pedagogical knowledge in preservice teachers and their pedagogical adaptivity, given the heterogeneous nature of classrooms. A study that collected K−12 students' perceptions of effective teaching revealed that elementary teachers were significantly more productive than middle and high school teachers because primary teachers are more likely to utilize a cache of best practices that address students' needs (Stobaugh et al., 2020). These instructional methods range from personalization, differentiation, response to

intervention, and checkpoints (Stobaugh et al., 2020).

Implications

Although Saudi Arabia is an oil-rich nation, it has not been able to create solutions to its educational crisis. As the desert nation is ranked in the low percentile of every international assessment, the way forward cannot be more of the same. The country's 2030 Vision maps out a new Saudi Arabia that is not reliant on fossil fuels as its primary export product but looks to expand the nation through its educational sector. However, efforts to improve Saudi schools are slow-moving as only approximately a third of Saudi teachers observe student-centered instructional strategies, and most schools are not prepared to implement the national quality framework (Almudara, 2019). Saudi principals have reported that they lack the standards and guidelines to conduct quality audits (Almudara, 2019). These findings highlight the realities that KSA educators lack the instructional skills and leadership required to transform the nation's school system and meet the demands of the highly publicized 2030 Vision. As mentioned previously, Russia and Poland reformed their school systems through the intense training of teachers. The present study points to two severe gaps in the performance of Saudi Arabian schools that can assist in addressing the country's student achievement problem.

First, educators teaching in Saudi must be vetted as highly qualified regardless of a teacher's nationality or employment status. Teaching colleges must feed public schools with teachers who have been properly pre-serviced and prepared to engage learners through a student-centered lens. Currently, pedagogical approaches in KSA are too rigid and homogenous, denying special needs and gifted-talented pupils equal access to learning opportunities (Alharbi & Alshammari, 2020). Although recent student-teachers from an eastern Saudi teaching college reported that they felt prepared to integrate technology into their instruction, most participants, soon-to-be credentialed teachers, felt they were not pedagogically competent to engage learners

effectively after they experienced several phases of teacher practice (Alghamdi et al., 2022). These student-teachers' lack of confidence reflects the lack of comprehensiveness and richness of the college's study plan. Students are more than likely to experience consistent academic achievement when teachers gain individual and collective efficacy in their instructional abilities (Hattie, 2018). Focusing on offering a rigorous and practical experience for future Saudi teachers is the first step to revamping the Saudi school system.

This study also shed light on the effectiveness of Saudi Arabian international schools, particularly in their teacher recruitment practices. Teacher participants in this research were all faculty of four private international schools located in the capital city of Riyadh. Although the Saudi Ministry of Education has considerable authority over these schools, the fact remains that these schools are all for-profit ventures. Saudi Arabia does offer not-for-profit schools, but these options are limited and, in some cases, extremely expensive. Just as in most businesses, these for-profit schools make every attempt to reduce expenses, including payroll. One way to reduce payroll is to hire non-qualified educators willing to work under market value. Unfortunately, parents enroll their children in these schools because they have no other options as Saudi public schools mainly only admit Saudi nationals. There are a few cases where non-Saudi children can register in public schools, but these exceptions are limited. International schools often market that they hire Western and native English speakers because in most Middle Eastern and Asian countries, having native English speakers as teachers is a major selling point. In many cases, these Western and native English speakers are not highly qualified teachers credentialed in a particular content area. In fact, the Ministry of Education issues permission to work licenses as long as the expatriate teacher has an attested degree which may not be in a particular content area. There are other cases where international schools skirt the regulations by finding creative solutions to employ unqualified teachers. These international schools' actions place profits over

pedagogy. Over the past decades, international schools have been a lucrative capital investment opportunity which has led many to question the motives and effectiveness of these schools (Bunnell et al., 2016). The credentialed teachers in all these schools outperformed the non-licensed teachers, which should serve as a signpost to the authorities, ownership, human resource specialist, and parents that recruiting licensed teachers offers a greater delivery of quality service to students.

In teaching and learning, quality results from competent educators who know what, when, and how to deliver instruction and support that will promote student achievement. As supported by the literature and the results of this research, teachers' ability to know students' preferences, notice student needs and variances, and make data-driven decisions are paramount to creating lifelong learners. Many educators often do not understand the impact learning profiling has on core teaching and learning functions such as unit and lesson planning, grouping, response to invention, and assessments. Learner profiling is a mindset that requires continuous nurturing through professional development and professional learning. School leadership must understand that professional development must meet teachers' wants, needs, and expectations and must be supplemented by further teacher research (Prenger et al., 2017). There is a mindset in many Saudi international and private schools that discourages teachers from professional growth out of fear that teachers will attempt to seek better opportunities (Sywelem, 2020). If schools are to meet the demands established via the 2030 Vision, they must provide teachers with meaningful professional development and create professional learning communities to promote collective efficacy among educators within their schools. In summary, hiring well-trained highly teachers and ensuring teachers cultivate their pedagogical accruement is essential to student achievement.

Limitations

Several limitations to this study must be noted when considering the contribution this research may have to the literature. First, the researcher's initial plan was to conduct a two-way ANCOVA to determine whether an interaction existed between teacher credentials and learner profiling when controlling for the PIRLS pretest. The fourth-grade teacher participants proctored a PIRLS pretest at the beginning of the study. However, after conducting the two-way ANCOVA the assumption for homogeneity of regression slopes was violated ($p = < .001$). Although an inspection of the scatter plot indicated that the slopes appear to have the same slope coefficient, the formal test indicated otherwise.

The researcher responded by analyzing the data using a two-way ANOVA, establishing whether a significant interaction between the two factors existed. During the assumption testing for the two-way ANOVA, the Kolmogorov-Smirnov test concluded that the data was not normally distributed for the licensed teachers who did not learner profile and the non-licensed teachers who did learner profile groups. The test could proceed because two-way ANOVA is robust to Type I error, which means the test can withstand the deviations of normality (Laerd Statistics, 2022).

The cultural and religious aspects of Saudi Arabia proved to be a limitation to the implementation of the study as it was sometimes challenging to communicate with several of the female teacher participants. Saudi Arabia is an Islamic country, which means the males and females are segregated on each school's campus. Some female teachers are resistant to speaking to males in person, and some participants were difficult to reach by phone or email. Furthermore, members of the experimental group were not consistently or punctually sending their weekly learner profiling notes. As a result, there were several occasions where the researcher had to communicate with members of management to ensure the teacher participants were following the

study protocols. The perceived pressure of administrators and management may have impacted how teachers engaged in the study. It must be noted that the lack of communication could have also been due to the shift from a two-semester to a tri-semester academic year while simultaneously transitioning from virtual learning due to the COVID-19 pandemic to returning to face-to-face instruction after a two-year hiatus from traditional instruction. The study may not have been timely or convenient for teachers, given the challenges they face returning to the school campus.

The present study details the effect credentialing has on student achievement without addressing the possible interaction between teacher credentials and experience. Teachers' years of service was not considered in the study. Therefore, the study does not explore or consider whether classroom experience played a role in contributing to teacher performance. Louws et al. (2017) suggest that years of teaching service do not impact student achievement, but other findings make the literature inconclusive. Many of the current study's participants in the licensed teachers' group had over five years of teaching experience, and two of these teachers had over ten years of teaching experience. Coenen et al. (2018) review of research regarding teacher characteristics on student achievement reported that the literature is indecisive as some earlier studies claim teacher experience has no significant impact on student achievement. On the other hand, more recent findings suggest that up to twenty-seven years of teaching experience does support student achievement. Teacher experience could provide further context to the results of the present study.

Finally, this study did not consider the student participants' English language ability prior to the teacher participants receiving the learner profiling treatment. All the participating sites were international schools with various nationalities and intellectual and language abilities. These schools do not implore any strategy regarding student class assignments other than age,

especially in the elementary and middle school sections. Any given class could include native, fluent non-native, and non-native no-ability English language learners, which means some teachers may have more of a mixed ability class representing the complete range from A1 to C2 on the Common European Framework of Reference for Languages (CEFRL). Teacher performance could have been attributed to simply having a more significant number of native and fluent non-native English speakers. However, the PIRLS test has been found to be a valid and reliable assessment designed for both fourth-grade native and non-native speakers of English speakers. This point does beg the question of how Saudi public school fourth-graders would perform in this study after the teacher received learner profiling treatment.

Recommendations for Future Research

The present study findings support previous findings concerning the significance of teacher credentials and learner profiling on student achievement. However, due to the previously discussed administrative practices, teacher preparation deficiencies, and the historical data regarding PIRLS performance in Saudi Arabian schools, further opportunities to provide context to these results, expand the literature, and support teaching and learning are available. The following sections describe opportunities for further research.

1. This study utilized the 2016 PIRLS reading selection to measure student achievement. However, Saudi Arabia has traditionally scored in the lower percentile since participating in the reading research in 2011. The PIRLS assessment may not be the best assessment of student achievement as it may not reflect what students are learning. As noted, Saudi Arabia is attempting to reform its educational sector through the auspice of the 2030 Vision. The student performance was similar to the actual 2016 PIRLS results. These similarities may suggest that a different assessment may be more appropriate when looking at student achievement in context to Saudi

Arabia. Alruwaili (2021) notes that Saudi students are not adequately trained in English language acquisition, which results in poor performance in standardized assessments. International assessments such as the PIRLS are achievement tests. Middle Eastern English language learners are often not given enough time to practice the language in authentic context to understand and comprehend the medium. Instead, teachers teach English through grammar, and students have limited opportunities. Therefore, it is unfair for students to take these assessments if they have not been trained on what is being assessed. To this end, future studies deploring English proficiency tests or achievement tests that measure what is actually being taught in the classroom may offer a better assessment of the effect of teacher licensure and learner profiling.

2. As stated in the limitations section, the literature is not conclusive regarding teacher experiences' effect on student achievement. The researcher noticed that both licensed teacher groups consisted of teachers with more combined years of experience than the other groups, and the non-licensed no learner profiling group had the least number of years of experience. This phenomenon begs the question of what effect years of experience had on the outcome of the dependent variable. A follow-up to the present study should be conducted to establish whether there is an interaction between teachers' years of service and student achievement. Research that observes the interaction between teacher licensing and years of service on student achievement would shed more light on the results of this study and may provide conclusiveness to previous studies about teachers' years of service.
3. International schools' effectiveness regarding student achievement has been questioned in many studies (Black & Armstrong, 1995; Bunnell, 2022; Kostogriz et

al., 2022). However, there is a gap in the literature that speaks directly to Saudi international schools' performance regarding student achievement. Moreover, the literature does not convincingly compare student achievement between international and Saudi public schools. The assumption is that international schools are better than government schools, but the literature does not support such beliefs. Some studies have recorded parents, teachers, and students' perceptions of international schools, but no clear and convincing data support those perceptions. The present study does not include participants representing the Saudi public school system. This study should be replicated, replacing the international schools' participants with Saudi public-school teachers and students.

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Appendix A: Communication with Survey Author


1:04
85%
Rilana Prenger
Available on mobile
Rilana Prenger · 4:31 PM
Hello, Raynor
Rilana Prenger · 4:34 PM
Hello Raynor,
Thank your for messaging me, en for your interest in our work! I am sorry the email bounced back and for the late response: I'm not working at the University of Twente anymore. Of course you can receive the questionnaire. There is one problem: it is in Dutch. I will contact my ex-colleague for any developments in translating it into English. I'll get back to you!
Kind regards,
Rilana
Raynor Roberts · 5:39 PM
Thank you very much! I am writing my Chapter 3 and it will help me. Also, can I use your questionnaire for my study? I can write a formal email if you like.
JUN 25
Latest message
Write a message...


1:05
85%
Rilana Prenger
Available on mobile
Rilana Prenger · 4:34 PM
Hello Raynor,
Thank your for messaging me, en for your interest in our work! I am sorry the email bounced back and for the late response: I'm not working at the University of Twente anymore. Of course you can receive the questionnaire. There is one problem: it is in Dutch. I will contact my ex-colleague for any developments in translating it into English. I'll get back to you!
Kind regards,
Rilana
Raynor Roberts · 5:39 PM
Thank you very much! I am writing my Chapter 3 and it will help me. Also, can I use your questionnaire for my study? I can write a formal email if you like.
JUN 25
Rilana Prenger · 12:45 PM
Good news! My colleagues already translated it into English for an EU project. You can use it: a formal email is not necessary. Good luck with your research and thesis.
Write a message...


1:05
84%
Rilana Prenger
Available on mobile
questionnaire. There is one problem: it is in Dutch. I will contact my ex-colleague for any developments in translating it into English. I'll get back to you!
Kind regards,
Rilana
Raynor Roberts · 5:39 PM
Thank you very much! I am writing my Chapter 3 and it will help me. Also, can I use your questionnaire for my study? I can write a formal email if you like.
JUN 25
Rilana Prenger · 12:45 PM
Good news! My colleagues already translated it into English for an EU project. You can use it: a formal email is not necessary. Good luck with your research and thesis.
PDF
Dispositions survey...
179 kB
Raynor Roberts · 1:14 PM
Thank you very much! I wish you the best.
Write a message...

Appendix B: Dispositions Survey

Dispositions survey

Introduction

This questionnaire was developed for the EU DATADRIVE project and is based on a study conducted by Prenger and Schildkamp (2018)[1].

With data use we mean: systematically collecting and analyzing data, such as the school student data system data, and different types of assessment data, but also observations in the classroom, with the intention to improve education

Add any additional introductory remarks here

Completing this survey will take about 15 minutes.

Thank you very much for completing this survey

Add any ethical procedure information here.

Add questions with regard to general information (e.g. name of school, gender, number of years of teaching experience; and also any pre-post identifier if applicable) here

Factors

Collective efficacy

The following statements are about the team in your whole school (and not only the team planned to participate in the data use intervention)

To what extent do you agree with the following statements (five point scale : completely

disagree, disagree, neutral, agree, completely agree)

- Our team is capable of solving the most difficult problems[2]
- Our team can motivate each other to use data
- If one person in our team does not want to use data, the other team members will give up
- Our team can solve problems based on data
- Our team is confident that every member is able to learn how to use data
- Our team is motivated to learn how to use data
- Our team feels obliged to use data

[1] Prenger, R., & Schildkamp, K. (2018). Data-based decision making for teacher and student learning: a psychological perspective on the role of the teacher. *Educational psychology*, *38*(6), 734-752.

[2] Based on our additional analysis if the survey is too long we recommend removing the yellow highlighted items.

- Our team is able to share knowledge with each other
- Data use is difficult within this team, because team members do not feel comfortable
- Work pressure makes it hard to use data for our team

Self-efficacy

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree):

- I am able to define problems based on data
- I am able to analyze data
- I am able to formulate possible explanations for a problem
- I am able to formulate improvement actions based on data
- I am sufficiently skilled to use data
- I have enough time to use data
- I am able to adapt my own teaching practice based on data
- I have access to data and results required to use data
- Student characteristics have a larger impact on student achievement than my teaching

- I have enough freedom to adapt my teaching based on data

Perceived control

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree):

- I can decide for myself how much time I spend on data use
- I can decide for myself whether I will use data or not
- I can decide for myself in which way I will use data

Affective attitude

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree):

- Data use is a waste of my time
- In my opinion using data is interesting
- In my opinion using data is a pleasant process
- I like using data
- In my opinion using data is important
- Data use makes teaching easier
- I'd rather teach based on my intuition than on data

Instrumental attitude

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree):

- Data use can help address problems in my own classroom
- Data use can help address problems at the school level
- Data use can help improve student achievement
- Data use can help improve commitment
- Data use can help increase my self confidence
- Data use can help improve the quality of education
- Data use can help improve efficiency of education
- Data use can help me with my professional development
- Data about my students reflect the quality of my teaching
- Data use makes me insecure

Subjective norm

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree):

- I use data because the head of my school considers this as important
- I use data because the school board director considers this as important
- I use data because my colleagues consider this as important
- I use data because the Education Inspectorate considers this as important

Intention

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree):

- I am planning to use data
- I am planning to participate in implementing data use in our school
- I am planning to stimulate my colleagues to use data
- I am planning to critically reflect on my teaching practice based on data
- I am willing to adapt my teaching practice based on data

The following questions concern the use of data in your teaching practice.

Data use for instruction

To what extent do you agree with the following statements (five point scale : completely disagree, disagree, neutral, agree, completely agree)

I use assessment data for:

- Determining the learning objectives for my teaching
- Formulating learning objectives for individual students
- Determining students' progress
- Formulating learning objectives for a group of well-performing students
- Formulating learning objectives for a group of weak students
- Determining which elements students do or do not master
- Identifying weak students
- Identifying well-performing students
- Adapting my instruction to the needs of the students
- Determining which students can work independently
- Grouping students
- Referring students to remedial teaching or other forms of special help
- Extended teaching to weak students (individually or in groups)
- Researching why students make mistakes

- Extended teaching to well-performing students Offering extra learning material (individually or in groups) to well-performing students
- Offering a separate learning path with extra content for well-performing students
- Offering a separate learning path for weak students
- Planning how to adapt my teaching to weak and well-performing students in the group
- Determining instruction time per subject
- Determining teaching pace
- Selecting actions to actively involve students more in the learning content
- Selecting specific skills or topics that need to be explained more
- Determining extra homework
- Giving students feedback about the strategies they use
- Giving students feedback about their effort
- Determining which students I will check up on more during or after they have worked on the task
- Better structuring my lessons
- Improving my own lessons

Do you have any comments related to this questionnaire? [open]

Thank you very much for participating! [**submission instruction if applicable**…]

Appendix C: IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

January 26, 2022

Raynor Roberts
Sarah Hutter

Re: IRB Exemption - IRB-FY21-22-506 The Effect of Learner Profiling On Fourth Grade English Students' PIRLS Achievement Scores of Students Whose Teachers Are Credentialed or Non-Credentialed

Dear Raynor Roberts, Sarah Hutter,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

Appendix D: Site Recruitment Letter

Date

XXXXXXXX

Academic Director

XXXXXXXX

XXXXXXXX

XXXXXXXX

Riyadh, KSA 14XXX

Dear Academic Director,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctorate degree. The title of my research project is The Effects of Learner Profiling on Fourth Grade English Students' PIRLS Achievement Scores of Students Whose Teachers Are Credentialed or Non-Credentialed, and the purpose of my research is to discover whether there is a relationship between learner profiling, teacher credentials and student achievement.

I am writing to request your permission to conduct my research at xxxx International School.

Participants will be asked to do the following task:

1. Attend an informational session that details this research.

2. Provide evidence of your teaching credentials issued by a government agency if you are a licensed teacher.
3. Proctor a fourth-grade English reading pre-assessment.
4. Participate in four-one-hour professional development sessions throughout a period of two months.
5. Complete at least two student profile notes for every student in your class over a two-month period.
6. Proctor a fourth-grade English reading pre-assessment.

Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, respond by email to rsroberts@liberty.edu. A permission letter document is attached for your convenience.

Sincerely,

Raynor S. Roberts Jr.

Doctorate Candidate

Appendix E: Social Media Recruitment

Social Media Recruitment Post

ATTENTION ENGLISH TEACHERS: I am conducting research as part of the requirements for a doctor of education degree at Liberty University. The purpose of my research is to determine if learner profiling affects teachers' instructional delivery and student achievement. To participate, you must be 21 years old or older and currently employed as an English teacher at an international school in Riyadh. Participants will be asked to complete a questionnaire during an informational session, proctor a fourth-grade English reading pretest and posttest, participate in four-one-hour professional development sessions throughout a period of two months, and complete at least two student profile notes for every student in your class over two months. The entire study will take approximately two months.

If you would like to participate and meet the study criteria, please contact Ray at +966xxxxxxxxx or me at xxxxxxxxx@xxxxxxx.edu. A consent document is will be given to you at the time of the informational session week. Participants will receive a 100SAR gift card to Jarir or Carrefoure and a certificate of completion if they complete the study.

Appendix F: Teacher Participant Recruitment Letter

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree in education. The purpose of my research is to determine if learner profiling and teacher credentials affect teachers' instructional delivery and student achievement. I am writing to invite eligible participants to join my study.

Participants must be 21 years of age or older and currently employed as English teachers at an international school in Riyadh. Participants, if willing, will be asked to:

- complete a questionnaire during an informational session
- proctor a fourth-grade English reading pretest and posttest
- participate in four-one-hour professional development sessions throughout two months
- complete at least two student profile notes for every student in your class over two months.

It should take approximately two months to complete the procedures list. Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, contact me at +966xxxxxxxxx or via email at xxxxxxxx@xxxxxxx.edu.

A consent document will be given to you at the time of the informational session. The consent document contains additional information about my research. If you choose to participate, you will need to sign the consent document and return it to me at the time of the informational session.

Participants will receive a 100SAR Jarir or Carrefoure gift card and certificate of completion if they complete the study.

Sincerely,

Raynor S. Roberts Jr.

Doctoral Candidate

+966xxxxxxxxx/xxxxxxxx@xxxxxxxx.edu

Appendix G: Consent Form

Consent

Title of the Project: The Effect of Learner Profiling on Fourth Grade English Students' PIRLS Achievement Scores of Students Whose Teachers Are Credentialed or Non-Credentialed
Principal Investigator: Raynor Roberts, Doctoral Candidate, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be at least 21 years old, employed as an English teacher at an international school in Riyadh, and teach fourth grade learners. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to determine if learner profiling affects teacher's instructional delivery. This research also seeks to determine whether the effect of learner profiling, if any, impacts students' performance on reading assessments.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

1. Attend an informational session that details this research. The session will last no longer than one hour. During this session, teachers will complete a questionnaire (20 minutes) that the researcher will use to select the experimental and control groups.
2. Provide evidence of your teaching credentials issued by a government agency if you are a licensed teacher. The researcher needs this information to assign you to the most appropriate study group. Physical or digital copies will suffice.
3. All participants will be asked to proctor a fourth-grade English reading pre-assessment. The assessment will be given to your existing fourth-grade class. Teachers will give every student 40 minutes to complete the assessment.
4. Participants in the treatment group will be asked to participate in four, one-hour professional development sessions hosted by the PI throughout a period of two months. Some teachers may receive the professional development at different times during the study. Teachers assigned to the control groups will receive the opportunity to attend the professional development sessions at the completion of the post-assessment. Each session will cover the essential elements of learning profiling through teaching noticing and formative assessments.
5. Participants in the treatment group will be asked to complete at least two student profile notes for every student in your class over a two-month period. Participants can record the student notes using their method of choice. Teachers are encouraged to complete as many notes as possible. However, all notes must include the student's name and a data point that the teacher observed or acquired. The data points are measured and unmeasured observations to make concerning students in whole class, grouping and individual settings. The researcher will not see these, these are just for teacher use. Writing student notes can occur in many modalities which means the engagement time can vary per teacher. Notes can take as little as a couple of seconds to hours depending on the teacher's perspective.

6. Proctor a fourth-grade English reading post-assessment. The assessment will be given to your existing fourth-grade class. Teachers will give every student 40 minutes to complete the post-assessment.

How could you or others benefit from this study?

The study seeks to improve learning interactions between teachers and students. In this regard, participants will benefit from learning strategies that may benefit their classroom instruction. All participants in the treatment group who complete the study to its completion will receive the following direct benefits:

1. A certificate for completing the Learner Profiling Training for Classroom Instruction training. The certificate is issued by The Academic Partnership.
2. Five-hours TESOL recognition issued by The Academic Partnership, LLC

Participants in the control group will have an opportunity to obtain these certifications at the end of the study.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

Participant responses will be kept confidential through the use of pseudonyms. Student scores will be anonymous. Scores will only be linked to the teacher.

- Data will be stored securely, and only the researcher will have access to records. Data will be stored on dedicated password-protected external drives. Hard copy data will be stored in an office safe. When not being utilized, the external drive will be stored in a dedicated combination office safe located at The Academic Partnership, LLC offices. The data will be retained for a minimum period of five years after completing this research study.
- Confidentiality cannot be guaranteed between participants during the professional development sessions. While discouraged, other members of the session may share what was discussed with persons outside of the group.

How will you be compensated for being part of the study?

Participants will be compensated for participating in this study. All participants who complete the study to its completion will receive the following: a 100SAR gift card to Jarir Bookstore or Carrefoure Markets. Participants will be able to decide which gift card they prefer.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with any school affiliated with the Ministry of Education, The Academic Partnership, LLC, or Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Raynor Roberts. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted] or email [redacted]. You may also contact the researcher's faculty sponsor, Dr. Sarah Hutter, at [redacted].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

_____

Printed Subject Name

_____

Signature & Date

Appendix H: Proctoring Instructions

Test instructions:

All teacher participants will be given 30 test booklets. Please proctor the test to your fourth grade English students only. Each booklet will be lettered A to DD. It is important that you keep a list of the students' names for your records. **DO NOT SHARE WITH ME THE STUDENTS' NAMES!** Students must **NOT** write their names on the booklets. Use this sheet to record their names. Do not give me this sheet. This test **MUST** be proctored in a controlled environment preferably during class time.

Students should be given no more than an hour (60 minutes) to complete this test. Please do not place any pressure on the students. You can tell them to do their best but not to worry.

This test is a pretest. Students will keep the same letter for the posttest. For example, student A for the pretest will be student A for the posttest.

Thank you for your support.

A: _____

B: _____

C: _____

D: _____

E: _____

F: _____

G: _____

H: _____

I: _____

J: _____

K:_____

L: _____

M: _____

N: _____

O: _____

P: _____

Q: _____

R: _____

S: _____

T: _____

U: _____

V: _____

W: _____

X: _____

Y: _____

Z: _____

AA: _____

BB: _____

CC: _____

DD: _____

Appendix I: Weekly Teacher Journal