Effects of School Leadership, Climate, and Growth Mindset on Teacher Efficacy in Southern Belize

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Abstract

Teacher efficacy is an important variable in determining students' success in school. Despite its importance, little is known about the factors influencing teacher efficacy. The focus of this study was to determine if there was a correlation between the independent variables: school leadership, school climate, growth mindset, teacher experience, teachers' educational attainment, and gender on the dependent variable, teacher efficacy. The study also determined if these factors predicted teacher efficacy. The study was conducted in Southern Belize among secondary school teachers (n=106) and utilized a five-part questionnaire to collect data. Findings from the study indicated a moderate but positive correlation between the combination of school leadership, climate, growth mindset, teaching experience, educational attainment, gender and teacher efficacy. The results also revealed that school leadership and growth mindset were the only two independent variables that could predict teacher efficacy. The research findings underscore the importance of understanding the factors that affect teacher efficacy to improve student achievement.

Keywords: Teacher efficacy, school leadership, climate, growth mindset, teacher experience, educational attainment, Belize

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Introduction

Undeniably, education is affected by many factors, one of which is teacher efficacy. Barni et al. (2019) defined teacher efficacy as the belief teachers have in their ability to complete tasks, meet obligations, and overcome challenges related to their capacity as professional educators; as a result, teacher efficacy has a significant influence on education. Barni et al. (2019) confirmed that teacher efficacy has implications in three areas: teaching effectiveness, instructional practices, and student achievement. Thus, teacher efficacy is important in evaluating educational institutions' effectiveness and eventual success.

Since teacher efficacy is a vital component of teacher effectiveness, instructional practice, and academic achievement, it is equally important to understand the factors which influence teacher efficacy. Of importance is how noncognitive factors affect teacher efficacy. Zhou (2016) described noncognitive factors as skills and behaviors comprising personal traits, attitudes, and motivations developed socially over time. Cheng & Zamarro (2016) suggested that teachers' noncognitive skills may be an instrumental factor because "teachers who provide social and emotional support improve student self-efficacy and happiness" (p.10). Noncognitive factors include the teachers' growth mindset, school leadership, and school climate. Recent studies have shown that teacher efficacy is affected by a growth mindset, school leadership, and school climate (Suborna, 2021; Cansoy & Parlar, 2018; Zakariya, 2020). Zeng et al. (2019) argued that there is research on how teachers with growth mindset influence students but little research on how a teacher's mindset influences "work engagement, well-being and perseverance in the educational setting" (p.2). However, Stewart (2018) affirmed that growth-minded teachers exhibited high levels of efficacy. Therefore, further research is needed to verify the impacts of teachers' growth mindset on teacher efficacy. School leadership, a noncognitive factor, is another area worth exploring as Cansoy & Parlar (2018) concluded that there was a positive and significant relationship between school leadership and teacher efficacy. Finally, school climate also affected teacher efficacy; Ma & Marion (2021) asserted that a positive school climate directly and positively affects teacher efficacy.

In addition, other teacher factors which affect teacher efficacy include teaching experience, educational attainment, and gender. Batool & Shah (2018) reported that female teachers had a higher self-efficacy than males. Batool & Shah (2018) also found that teaching experience affected teacher efficacy; however, the study also discovered that academic qualifications and institutional type affected teacher efficacy the least. In contrast, Tayyaba Shazadi et al. (2011) found no significant difference between educational qualifications and teacher efficacy; however, Tayyaba Shazadi et al. (2011) also confirmed a significant difference between teachers' gender and teacher efficacy. Tayyaba Shazadi et al. (2011) also indicated that teacher experience significantly affected teacher efficacy. Furthermore, Moosa & Shareefa (2019) concluded that "qualifications may play a vital role in efficacy beliefs" (p. 599). Therefore, exploring the relationship between other teacher factors (years of experience, educational attainment, and gender) and teacher efficacy aids in understanding the roles these factors play in affecting teacher efficacy.

According to Näslund-Hadley et al. (2013), there were relatively few trained teachers at the secondary level in Belize. Therein lies the reason to explore the effect of educational qualifications on teacher efficacy. Furthermore, data from the Abstract of Statistics 2020/2021 revealed that in the Toledo District, only 43% of secondary school teachers are trained, slightly increasing from 30.1% in 2019/2020 (Ministry of Education, 2021). However, despite the increase in trained teachers, more than half of the population of teachers are not qualified. Thus, the need to determine if educational qualification affects teacher efficacy.

In Belize, the factors that affect teacher efficacy are largely unexplored and school administrators often make educational reforms to improve academic performance; however, these initiatives lacked empirical evidence to substantiate the efforts. This study sought to fill in the gap that currently exists in teacher efficacy. Thus, studying the noncognitive factors and other teacher factors in a Belizean context is critical in determining the relationship between the non-cognitive and other teacher factor variables and teacher efficacy.

Despite limited research, teacher efficacy in education directly influences academic performance and motivation (Achurra & Villardon, 2012). Identifying the noncognitive factors and other teacher factors that influence teacher efficacy can result in targeting these factors to build teacher efficacy and improve student

performance. One strategy that can be used in educational reform in Belize is developing teachers' efficacy through professional development. Building teachers' self-efficacy will translate into students' improved academic performance. Consequently, this study examined the effects of school leadership, climate, growth mindset, teaching experience, and gender on the teacher efficacy of high school teachers in Southern Belize. The following two research questions guided this study:

1. Is there a statistically significant relationship between teacher efficacy and the combination of school leadership, school climate, growth mindset, teacher experience, educational attainment, and gender?
2. Can teacher efficacy be predicted by school leadership, climate, growth mindset, teacher experience, educational attainment, and gender?

Review of Related Literature

What is self-efficacy?

Self-efficacy is the belief a person has in their ability to complete tasks and overcome challenges (Tschannen-Moran et al. 1998). Self-efficacy is not to be confused with self-esteem, as self-esteem refers to an individual's characteristic that is affected by evaluating oneself (Tschannen-Moran et al. 1998). For these reasons, Tschannen-Moran et al. (1998) explained that someone can feel ineffective for a particular task with no impact on that person's self-esteem, and as such, self-efficacy is different from self-esteem because self-efficacy is a "self-perception of competence rather than the actual level of competence" (p. 211).

Factors affecting Teacher Efficacy

Tayyaba Shazadi et al. (2011) conducted a study to determine factors affecting teachers' self-efficacy at the secondary school level in Islamabad. The sample included 2274 teachers working under the Federal Directorate of Education; data was collected using Bandura's self-efficacy scale. The study found no significant difference between teachers' qualifications, age, and self-efficacy. There was also a significant difference between teachers' gender, and experience (Tayyaba Shazadi et al., 2011). Furthermore, Tayyaba Shazadi et al. (2011) reported that locality significantly affected teachers' self-efficacy. Additionally, Batool & Shah (2018) conducted a quantitative study on determining the causative factors behind an efficacious teacher. Batool & Shah (2018) utilized the Ohio State Teacher Efficacy Scale to collect data from 171 randomly selected secondary school teachers in the Islamabad district. The findings from Batool & Shah (2018) concurred with Tayyaba Shazadi et al. (2011) and concluded that female teachers had a higher self-efficacy, the institution type also affected teacher efficacy, and there was a significant difference between the efficacy of teachers teaching crowded classes and those teaching uncrowded classes. In 2015, Cook carried out a quantitative study on understanding teachers' efficacy within the Caribbean; data was collected from 905 teachers from primary and secondary schools in Jamaica (Cook, 2015). The Teachers' Sense of Efficacy Scale (TSES) was used to gather data. The data collected showed significant differences in teaching efficacy based on gender, school, and teacher position. These findings are similar to previous studies.

Growth Mindset

Ronkainen et al., (2019) identified two categories of mindset: growth mindset and fixed mindset. A growth mindset is defined as a "core assumption about the malleability of personal qualities," and "people with a growth mindset hold the beliefs that intellect, personality, and ability as something that can grow or develop over time" (Zeng et al., 2019). Ronkainen et al. (2019) compared a growth mindset and a fixed mindset. Ronkainen et al. (2019) revealed that people with a growth mindset see failure as a learning opportunity and emphasize the importance of the learning process and understanding the importance of learning; meanwhile, persons with a fixed mindset exhibit helpless behavior patterns, avoid challenges, and have a low level of significance. A teacher's growth mindset can impact a teacher's behavior in the classroom with an emphasis on their instructional approaches and interactions with students (Zeng et al., 2019). A teacher's growth mindset is important because teachers influence students' beliefs about their abilities (Zeng et al., 2019). A teacher with a growth mindset conveys that mistakes are learning opportunities with relevant assignments as reinforcement of this concept and evaluations that reward improvement (Yeager et al.,

2022). One way in which teachers influence students' growth mindset is by encouraging students to try harder and motivating them through praise (Zeng et al., 2019). To measure growth mindset, Zeng et al. (2019) utilized a "Chinese version of the 4-item Growth Mindset Inventory" (p. 4) that Dweck originally developed.

Suborna (2021) utilized mixed method research to determine the impact of teachers' growth mindset on teachers' self-efficacy and well-being. The sample size was 1,100 research participants. Results from the study confirmed that a teacher's growth mindset positively impacts a teacher's self-efficacy. In 2020, Varli & Yilmaz conducted a study to examine the relationship between in-service teachers' mindset types and their efficacy beliefs and found that teachers with a growth mindset had high self-efficacy (Varli & Yilmaz, 2020).

School Climate

School climate is another factor that affected teacher efficacy (Zakariya, 2020). Lacks & Watson (2018) defined school climate as a "set of internal characteristics that distinguish one school from another and influence the behavior of each school member" (p.49). The school's leadership tremendously influenced the school climate. Lacks & Watson (2018) confirmed that school leaders were among the most important factors determining teachers' perception of school climate using a quantitative method with a correlational design. As a result, creating a positive school climate is the school leader's responsibility (Lacks & Watson, 2018). Collie et al. (2012) suggested that school climate is "determined by the quality of relationships between individuals at school, the teaching, and learning that take place" (p. 1189). Collie et al. (2012) further asserted that school climate could foster resilience or become a risk for students, teachers, administrators, parents, and the school community. Katsantonis (2019) claimed that literature reviews suggested that school climate contributes significantly to student achievement, teachers' intention to remain in the profession, and a thriving school environment. Lacks & Watson (2018) examined the relationship between school climate and teacher self-efficacy in the rural Virginia School System, data was collected from 644 elementary and secondary school teachers using the School Climate Index developed by Tschannen-Moran, Parrish, and DiPaola and the Teacher Sense of Efficacy Scale (TSES) developed by Tschannen-Moran and Hoy. Lacks & Watson (2018) reported that there was no significant correlation between teachers' self-efficacy and school climate. The research also found no significant correlations between collegial leadership and teachers' efficacy.

School Leadership

Leadership is crucial to be effective; therefore, a leader must master the skills necessary to be an effective leader. Mehdinezhad & Mansouri (2016) investigated the relationship between school principals' leadership behavior and teachers' sense of self-efficacy. The study used a descriptive and correlational design. Data on teacher efficacy was collected using the Tschannen-Moran, and Woolfolk Hoy Efficacy scale, and data on leadership was collected using the Leadership Multifactor questionnaire (Mehdinezhad & Mansouri, 2016). Findings from the study indicated that principals' leadership behavior of idealized influence and intellectual stimulation could predict changes in teachers' sense of self-efficacy. Mehdinezhad & Mansouri (2016) emphasized that school leaders have a tantamount effect on teachers' beliefs, values, and goals, especially since leaders are seen as heroes.

Francisco (2019) sampled 260 secondary teachers to determine the school principals' transformational leadership styles' effect on teachers' self-efficacy. Similar to Mehdinezhad & Mansouri (2016), data was collected using the Multifactor leadership questionnaire and Tschannen-Moran and Woolfolk Hoy Teacher efficacy scale. Findings showed that effective leaders influenced teacher efficacy, and leaders who provided contingent rewards (clarifying roles and requirements from leaders to follow) also influenced teacher efficacy. Therefore, current research indicated that school leadership affected teacher efficacy.

Teacher Qualification and Experience

Guo et al. (2012) noted that previous research indicated that teachers with more teaching experience dedicated more time to educational activities when compared to teachers with less teaching experience; however, Guo et al. (2012) did not support this finding and recommended the need for further research. However, Moosa & Shareefa (2019) concluded that a teacher's experience could determine teacher efficacy. Tayyaba Shazadi et al. (2011) confirmed that gender, academic qualification, experience, and locality affected self-efficacy. Tayyaba Shazadi et al. (2011) also found that teachers' age does not affect high school teachers' efficacy. Therefore, further investigation of teachers' experience and qualifications is necessary because Mageka (2020) concluded that teacher's experience, teacher's qualifications, teacher's preparedness, and teacher professional development "positively and significantly influence the academic performance of students/schools" (p. 112). More recently, Graham et al. (2020) asserted that the evidence provided in research to measure teaching quality needs to be clear-cut. Therefore, investigating the teacher factor variables is essential in determining how teacher variables can impact teacher efficacy.

Conceptual Framework

The conceptual framework designed for this study was based on Albert Bandura's Social Cognitive Theory and Bronfenbrenner's social ecological theory. The social cognitive theory emphasizes how environmental and cognitive factors influence a person's learning and behavior (Lacks & Watson, 2018). Therefore, it can be deduced that the self-efficacy of teachers can be influenced by their external and internal reinforcements. According to Bronfenbrenner, in social ecological theory a "person's intrinsic feelings are constantly being shaped by the interaction with the environment" (Zakariya, 2020 p. 2) in this case the school climate and the school leadership. This study was guided by the conceptual framework, *variables affecting teacher efficacy,* as shown in figure 1. This conceptual framework was developed to illustrate the relationship between noncognitive factors, growth mindset, school leadership, climate, and other teacher factors, including teacher experience, educational attainment, and gender influence teacher efficacy. It is assumed that if these noncognitive factors and other factors are developed, this will lead to improved teacher efficacy, resulting in improved student academic performance.

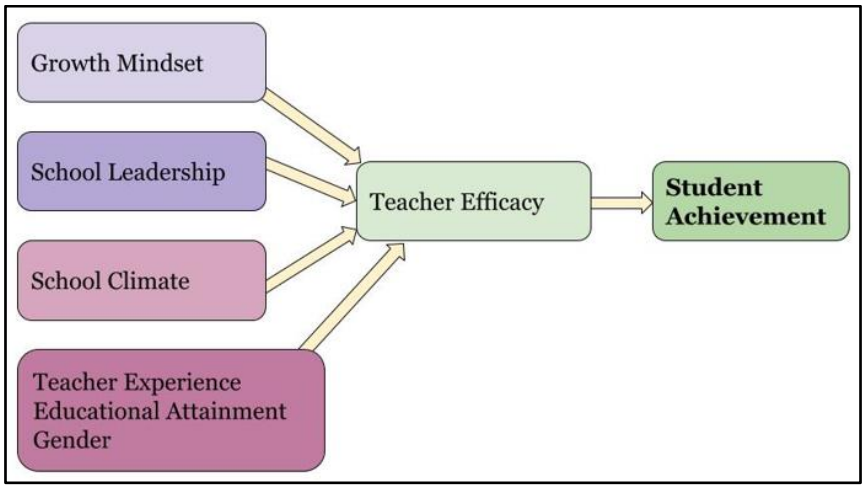

Figure 1. Concept Framework- Variables affecting Teacher Efficacy

Method

For this study, a quantitative research method with a correlational design was applied to explore the relationship between teacher efficacy and teachers' noncognitive factors (school leadership, school climate, growth mindset) and other teacher factors (years of experience, educational attainment, and gender). The population of this study was all teachers from four secondary schools in Southern Belize. According to the Ministry of Education (2021) Abstract of Statistics, there were 146 teachers in this population (N ≅ 146 – Males = 77, Females = 69). Data was collected using an online survey instrument and a paper-based survey for teachers without internet access.

Sample

The sample size was 106 teachers, with a 5% margin error and a 95% confidence level. Due to the small population size, no sampling method was utilized. The entire population was invited to participate in the research. The criteria for the research participants were to be current teachers at a high school in Southern Belize and to be willing to participate in the study.

Thus, 106 teachers from the four high schools in Southern Belize participated in the study. The response rates by schools were as follows: high school C and D had 100% response rates both of which are smaller schools. High school A had a response rate of 96% and high school B had the lowest response rate of 52%. The sample included 60 (56.6%) female and 46 (43.4%) male teachers. The overall ethnic composition of the sample included 23.6% Mestizos, 22.6% Q'eqchi Maya and 18.9% Garifuna. The results in references to educational attainment revealed that overall, 66% of teachers attained a bachelor's degree, 24.5% of the respondents attained an associate's degree and 9.4% of the respondents attained a master's degree.

Instrumentation

The data for this study were collected using a survey instrument adapted from Panorama's Social Emotional Learning Survey that was developed by a team of researchers at the Harvard Graduate School of Education under the direction of Dr. Hunter Gehlbach (Panorama Education, 2020). According to Panorama Education (2020), the reliability of the instrument was evaluated using Cronbach's alpha which measured the internal consistency of surveys. Panorama Education (2020), confirmed that all survey topics met or exceeded the sufficiency threshold of .70. Additionally, the surveys were tested for structural validity and convergent and discriminant validity, which measures how well the surveys measure what they intended to measure (Panorama Education, 2020). The survey instrument was designed with five sections. The first section collected demographic data. The second section collected data on school leadership. The third section collected data on school climate. The fourth section collected data on growth mindset. The final section collected data on teacher efficacy. The survey instrument was designed to ensure each question was answered before exiting the application, this enabled the researcher to collect data for each question and limit the number of non-responses.

Data Analysis

Data collected for the study were analyzed using IBM SPSS 23 Statistical Software. The two research questions were analyzed using multiple linear regression. Multiple linear regression was used to model the relationship between multiple independent variables (school leadership, school climate, growth mindset, teacher experience, teachers' educational experience, and gender) and the single dependent outcome variable (teacher efficacy). Thus, the multiple linear regression analysis was used to verify if there were any relations between the dependent and independent variables and, if there were, to what extent. The regression analysis was also used to determine if it is possible to make predictions regarding the dependent variable (Uyanik & Güler, 2013).

Results

The focus of the first research question was to determine if there was a statistically significant relationship between teacher efficacy and the combination of: school leadership, school climate, growth mindset, teacher experience, educational attainment, and gender. The results indicated that $R = .463$ indicated a moderate correlation between teacher efficacy and the combination of: school leadership, school climate, growth mindset, teacher experience, educational attainment, and gender. Thus, the combined effect of the independent variables is a 46.3% chance of increasing teacher efficacy. Additionally, $R^2 = .214$, indicated that about 21.4% of the variation in teacher efficacy can be explained by the resulting model. Thus, the relationship between teacher efficacy and the combination of: school leadership, school climate, growth mindset, teacher experience, educational attainment, and gender is statistically significant. As a result, the null hypothesis was rejected.

To answer the second research question, the results from the ANOVA and Coefficients Tables from the multiple linear regression from research question one were used to determine if teacher efficacy can be predicted from school leadership, school climate, growth mindset, teacher experience, educational attainment, and gender. The results indicated that a significant proportion of the total variation in teacher efficacy can be predicted from the predictors in the resulting model: school leadership and growth mindset, F (6, 99) = 4.494, $p < .01$. In examining the individual factors, the results from Table 1 indicated that teacher's gender (β = .056, t = .722, p = .472); teachers' educational attainment (β = -.016, t =-.207, p = .836); years of experience teaching (β = .039, t = 1.616, p = .109) and school climate (β = .044, t = .560, p = .576) does not predict teacher efficacy. However, the results revealed that school leadership (β = .107, t = 1.760, df = 6, p = .082) and growth mindset (β = .216, t = 2.642, df = 6, p = .010) positively predict teacher efficacy at alpha levels of .10 and .05, respectively. Thus, of the six variables tested, only school leadership and teachers' growth mindset were significant predictors of teacher efficacy. For every one-point increase in school leadership, teacher efficacy increases by .107, and for every one point increase in growth mindset, teacher efficacy increases by .216. Therefore, the results indicate that unlike previously hypothesized, school leadership and teachers' growth mindset does contribute to teacher efficacy. The regression model tested was:

$$\hat{Y} = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \text{error}$$

Where: X_1 = Gender — $\hat{Y}$ = Teacher Efficacy
X_2 = Educational Attainment
X_3 = Years of Experience Teaching
X_4 = School Leadership
X_5 = School Climate
X_6 = Growth Mindset

The resulting regression model was:

$$\hat{Y} = 2.545 + .107(X_1) + .216(X_2) + \text{error}$$

Where: X_1 = School Leadership — $\hat{Y}$ = Teacher Efficacy
X_2 = Growth Mindset

Table 1. Multiple Linear Regression Model Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.545	.318		7.997	.000
	Teachers' Gender	.056	.078	.065	.722	.472
	Teachers' Educational Attainment	-.016	.075	-.021	-.207	.836
	Years of Experience Teaching	.039	.024	.157	1.616	.109
	School Leadership Score	.107	.061	.205	1.760	.082
	School Climate Score	.044	.079	.071	.560	.576
	Growth Mindset Score	.216	.082	.278	2.642	.010
Dependent Variable: Efficacy Score						

Limitations

The major limitation of this study was the small sample size which limited the generalizability of the results. Due to the size of the population, the sample does not provide adequate representation. Another limitation

was that the study was limited to high school teachers in Southern Belize, as a result, the conclusion drawn cannot be generalized to high school teachers across Belize.

Conclusion and Recommendations

The purpose of this quantitative correlational study, utilizing a regression model, was to determine if there was a statistically significant relationship between teacher efficacy and the combination of school leadership, school climate, growth mindset, teachers' educational attainment, and teacher experience. The result revealed a moderate correlation, with 46.3% of the variance in teacher efficacy being accounted for by the combination of school leadership, climate, growth mindset, teacher experience, educational attainment, and gender. Findings also indicated that from the six predictors, only school leadership and growth mindset were significant predictors of teacher efficacy with growth mindset being the most significant predictor.

Congruent with being a moderately positive relationship, Cansoy & Parlar (2018) also found a positive and significant relationship between school leadership and teacher efficacy. Suborna (2021) concurred that the growth mindset of teachers' had a positive impact on teacher efficacy. Furthermore, Batool & Shah (2018) found that female teachers had a higher self-efficacy than male teachers; Tayyaba Shazadi et al. (2011) also confirmed that there was a significant difference between teachers' gender and teachers' self-efficacy and a significant difference between teachers' experience and teacher efficacy. However, Tayyaba Shazadi et al. (2011) also reported that there was no significant difference between teachers' educational qualifications and teacher efficacy.

The findings of this study indicated that the only significant predictors of teacher efficacy were growth mindset and school leadership. Mehdinezhad & Mansouri (2016) confirmed that leadership is able to predict teachers' sense of self-efficacy. Varli & Yilmaz (2020) found a significant and positive relationship between teachers' efficacy in instructional strategies and growth mindset. Suborna (2021) confirmed that a growth mindset positively impacts teachers' self-efficacy. Additionally, Mehdinezhad & Mansouri (2016) in their research found that principals' leadership could predict the changes in teachers' sense of self-efficacy. Furthermore, Ma & Marion (2021) asserted that leaders who defined the school's mission managed the instructional program, and developed a positive school learning climate positively affects teacher efficacy. These findings are consistent with the guiding theories used to frame the conceptual framework of this study. One of the main factors that determine a teacher's perception of school climate is the principal (Lack & Watson, 2018). As such, leaders of schools need to foster an environment where teachers can discuss their ideas and share their experiences. Creating an open environment can enhance teachers' experiences, teachers can then improve their self-efficacy and they can offer a more meaningful educational experience for students (Lack & Wilson, 2018).

Improving high school student achievement is crucial, as such institutions need to find innovative ways of ensuring the success of all students. Findings from this research can be used to guide policymakers to make informed decisions to build teacher efficacy (Ma & Marion, 2021). While the research does not indicate causation, it does confirm that there is a significant relationship between the combined factors of school leadership, climate, growth mindset, teacher experience, educational attainment, gender, and teacher efficacy. Additionally, the findings indicated that school leadership and growth mindset are predictors of teacher efficacy. Therefore, using the results from this research, the Ministry of Education and high school leaders can implement policies that can foster school leadership and growth mindset to build teacher efficacy. Building teacher efficacy can then improve student achievement in school and later in life.

Given that school leadership and growth mindset were found to be predictors of teacher efficacy, teachers can build their self-efficacy through effective school leadership and by having a growth mindset. Therefore, school administrators can implement professional development opportunities for leaders to create a positive working environment by creating a supportive school environment where "teachers can share ideas and feel comfortable sharing experiences that positively build the atmosphere" (Lacks & Watson, 2018 p. 50). One intervention that can be used in practice is providing professional development for teachers to "teach pupils that intelligence is not a fixed characteristic" (Rienzo et al., 2015 p.7) and to reinforce this concept when teaching students. Another mechanism to promote growth mindset is for school leaders to

model growth mindset and provide teachers with the opportunities to learn and try new things without fear of making mistakes but with the objective of learning from the process of implementing new ideas (Heggart, 2015). Other practices to build a growth mindset are incorporating formative feedback with meaningful contributions from the teachers and providing teachers with an opportunity to reflect upon new ideas and determine the lesson learned from the process (Heggart, 2015). Implementing these practices at the high school level can lead to improved student achievement.

Certainly, more research is needed to fully understand this relationship as there is limited research in these areas, especially teacher efficacy. A larger sample size would be beneficial in determining the significance of the independent variables and the impact on teacher efficacy. Further research is needed to establish definitively how teacher efficacy is affected by school leadership, school climate, growth mindset, teaching experience, educational attainment, and gender. Another recommendation is to conduct a qualitative study to understand more deeply the thoughts, feelings, and attitudes of teachers about school leadership, school climate, and growth mindset (Lack & Watson, 2018).

Competing Interests

The authors declare that they have no conflict of interest.

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