Rural Teachers' and School Leaders' Perceptions of School Climate and Student Achievement in Math and Reading

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Abstract: The purpose of this multiple case study was to investigate teachers' and school leaders' (principals and psychologists) perceptions of how school climate affects student achievement in math and reading at rural schools in Western New York. The five themes included building strong relationships, social-emotional learning, empowering leadership, differentiation, and positive reinforcement. The results of the study revealed teachers and school leaders perceived school climate domains (engagement, safety, environment) affect student achievement in math and reading at rural schools.

Introduction

There is a clear academic achievement gap between rural and suburban students, especially in math and reading (NAEP, 2022a; NAEP 2022b). Teacher perceptions of school climate are strongly linked with math and reading achievement in students (Hollifield, 2019). Schools with a positive climate have higher academic achievement than institutions with a negative school climate (Erdem & Kaya, 2023). The purpose of this multiple case study was to investigate teachers' and school leaders' perceptions of how school climate affects student achievement in math and reading at rural schools.

Review of Literature

There is an explicit achievement gap in math and reading between rural and suburban students (NAEP, 2022a; NAEP, 2022b). Students attending rural schools are at an increased risk for poorly developed vocabularies (Collins et al., 2016) and the reading disparities for rural students begin at an early age. Rural preschool children visit the library less frequently than suburban preschool children, start school with lower reading levels than suburban students (Clarke, 2014) and rural kindergartners score statistically significantly lower than suburban kindergarteners in reading achievement (Graham & Teague, 2011). This issue persists into higher grades as a high percentage of rural fifth and sixth graders are at-risk of reading failure (Daniel & Barth, 2023).

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School climate and academic achievement are strongly related, with extensive research indicating the relationship between the two (Khan et al., 2022). A supportive school climate can positively impact student academic achievements and potentially mitigate achievement gaps between students and schools of varying socioeconomic backgrounds (Berkowitz et al., 2017).

Teacher perceptions of school climate are linked with student achievement (Johnson Spears, 2018). The way teachers view the school climate has a medium to high effect on academic achievement (Hollifield, 2019). As teachers' perceptions of school climate can change over time (Wang & Degol, 2016), investigating teachers' views of how school climate affects academic achievement in math and reading at rural schools is beneficial.

Methods

A multiple case study design was selected for this study focused on a contemporary phenomenon designed to answer how and why questions (Yin, 2018). Participants were purposefully selected teachers and school leaders from two rural schools in Western New York. School A serves roughly 230 students in Grades K–5 and is classified as rural: fringe. The demographic makeup is over 90% White with small percentages of Hispanic, Asian, and multiracial students. More than 30% of School A students are economically disadvantaged. Per-pupil expenditure is below the New York State average. School B is also classified as rural: fringe and is a Title I school that serves roughly 230 students in Grades K–5. The demographic makeup is over 95% White, with small percentages of students who are Asian, American Indian, and multiracial. Over 30% of students at School B are economically disadvantaged. Per-pupil expenditure is below the statewide average. Participants were eligible for this research study if they met the predetermined participation criteria of teachers and school leaders working at a rural school in Western New York for at least 3 years. The final sample included five teachers from School A, four teachers from School B, and two principals and two school psychologists (one from each school).

Table 1. Teacher and School Leader Participants.

Pseudonym	School	Role
Cynthia	School A	Principal
Margaret	School A	School Psychologist
Joyce	School A	Second Grade Teacher
Douglas	School A	Physical Education Teacher
Wanda	School A	Special Education Teacher
Vicki	School A	Music Teacher
Alice	School A	Special Education Teacher
Beth	School B	Principal
Tina	School B	School Psychologist
Stephanie	School B	RTI Teacher
Joann	School B	Third Grade Teacher

Hellen	School B	First Grade Teacher
Howard	School B	Second Grade Teacher

Institutional Review Board (IRB) approval was gained before any participants were recruited and teachers and school leaders provided informed consent prior to participating in any data collection protocols. The first data source was the ED School Climate Surveys (EDSCLS, 2019): Instructional Staff Survey, which is a comprehensive measure of school climate (Bradshaw et al., 2014). This survey helped establish teachers' perceptions of school climate. The EDSCLS (2019) Instructional Staff Survey was administered via Survey Monkey. Semi-structured, open-ended interviews were conducted with teachers from each of the two rural elementary schools. School leader interviews were the third form of data collection. School leaders have different experiences than teachers, even when they work within the same building. Interviews with school leaders provided their perspective of school climate and academic achievement at rural schools through a leadership lens.

Survey data were collected first and examined to determine participants' perceptions of the three domains of school climate (i.e., engagement, safety, and environment). Perceptions were further examined through interviews which were audio recorded and transcribed verbatim to allow for textual analysis. Analysis began with open coding, a means to interpret raw research data (Creswell & Poth, 2025). Next, categorical aggregation was used as a data analysis technique by pursuing a collection of examples from the data and finding meanings that pertain to the phenomenon (Creswell & Poth, 2025). This process was conducted as part of the within-case analysis for each school. The next step in the analysis process entailed a cross-case synthesis, which Yin (2018) proposed as an analytic technique when the researcher is studying more than one case. In the cross-case synthesis the cases are compared and contrasted, data interpreted, and sorted into patterns (Yin, 2018). Finally, data were closely analyzed in order to develop naturalistic generalizations, presented as findings below.

Findings

The purpose of this multiple case study was to explore teachers' and school leaders' perceptions of the effect of school climate on student achievement in math and reading at rural schools. The cases were two rural elementary schools in Western New York. Analysis and triangulation of surveys, teacher interviews, and school leader interviews across the two cases yielded five themes: (a) building strong relationships, (b) social-emotional learning, (c) empowering leadership, (d) differentiation, and (e) positive reinforcement.

Building Strong Relationships

Building strong relationships was a common theme identified by the participating leaders and teachers from both rural elementary schools. Participants described how their schools focused on strong relationships and the influence of relationships on the domains and subdomains of school climate and academic achievement. Participants from both schools reported building relationships via different strategies and social-emotional learning (SEL). Participants underscored the importance of fostering relationships with students to support their social-emotional needs, to improve student behavior, and prevent bullying. Relationships had both direct and indirect influences on academic achievement in math and reading at their schools, positively influencing students' effort, perseverance, behavior, and other subdomains of school climate, which, in turn, contributed to academic achievement.

Social-Emotional Learning

Participants used SEL in their schools and fostered social-emotional development to positively influence the school climate domains and academic achievement. School leaders and teachers from both schools reported their schools implemented the following SEL practices: dedicated SEL time, restorative justice practices, circles, check-ins, a growth mindset, character education, social-emotional curriculum, modeling, and counseling. Teachers used SEL time to allow the students to share stories and facts about themselves and build respect between teachers and students.

The school leader and teacher participants from both schools perceived SEL as a strategy for mitigating bullying and promoting the positive mental health of their students. Teachers emphasized the importance of using the social-emotional curriculum to prevent or resolve problems, such as bullying and violence through practices like restorative justice circles. Participants also used social-emotional learning to promote the positive mental health of their students by fostering physical safety and positive instructional environments.

Empowering Leadership

Empowering leadership was a common theme across participants from both schools. School leaders set the tone for school climate which had a trickle-down effect on school climate and academic achievement in math and reading. The school leader and teacher participants perceived empowering leadership and the trickle-down effect as influencing academic achievement in math and reading.

Differentiation

Differentiation was another theme in participant responses about school climate and academic achievement. Participants from both schools reported using differentiation to meet the needs of culturally or linguistically diverse students, stressing the importance of differentiation and using read-alouds and libraries to expose students to "all sorts of different cultures." The participants considered a positive instructional environment an important part of academic achievement and stressed the importance of using

differentiation to meet students' needs regarding the school climate domain of discipline. Teachers differentiated to meet the social-emotional needs of students in addition to differentiating instruction to meet their academic needs.

Positive Reinforcement

Participants from both schools considered positive reinforcement an important means of maintaining a positive school climate and academic achievement. All teachers strongly agreed or agreed to the EDSCLS survey item, "Staff at this school recognize students for positive behavior." Teachers in both schools used "lots of positive reinforcement" to foster a positive instructional environment. Multiple teachers described school celebrations as a means of fostering teacher–student relationships.

Discussion

The purpose of this multiple case study was to investigate teachers' and school leaders' perceptions of the influence of the school climate model domains of engagement, safety, and environment on academic achievement in math and reading in rural schools. This study supported prior research related to this topic and filled the gap in the empirical literature. A novel finding of this multiple case study is rural teachers and school leaders perceived that leadership influences the school climate domains of engagement, safety, and environment. Participants believed school leaders could positively affect school climate by empowering teachers and being open to their thoughts and ideas. All participants perceived leadership to influence the school climate domains, with some describing school leadership as the most significant influence on the school climate domains.

Study participants perceived school leaders as affecting student achievement in math and reading through the trickle-down effect, suggesting that school leaders affect teachers and school climate, which, in turn, influence student achievement in math and reading. Other scholars have indicated that school leaders indirectly affect student achievement by influencing teachers and school climate (Dutta & Sahney, 2022; Özdemir, 2019). Findings from this study aligned with McCown's (2018) findings that teachers and school leaders at rural elementary schools believed school leaders indirectly influence student achievement in math and reading.

Participants perceived strong teacher–student relationships to improve student motivation and achievement in math and reading. This finding supports results from Scales et al. (2020), who found that relationships were indirect predictors of student achievement through motivation. Study participants perceived building strong relationships as a way to overcome cultural and linguistic barriers, supporting the findings of Brace (2011), who reported a link between teachers' cultural competence and students' academic achievement via improved relationships with students in urban elementary schools. Findings from this study demonstrate strong relationships have a positive effect on school climate. Participants associated strong relationships with improved academic achievement, reinforcing findings of several scholars indicating the positive influence of

teacher–student relationships on student achievement in math and reading (Valiente et al., 2019; Zhou et al., 2023).

Participants described social-emotional learning as a valuable strategy for improving school climate and academic achievement, affirming the findings of Panayiotou et al. (2019), who found a direct link between social-emotional competence and academic attainment. Participants used SEL to prevent bullying and improve relationships, emotional safety, mental health, and other aspects of school climate, consistent with Caldarella et al. (2019) and Labelle (2019) who found SEL resulted in "a reduction of problem behaviors, an increase in academic achievement among children and youth, and increased resilience in students" (p. 1).

Empowering leadership trickles down from high-level leaders to the hierarchy of an organization; thus, the leaders indirectly improve the employees' performance (Byun et al. 2020). This study extended previous findings to the school setting; teachers described empowering leadership as trickling down through the organization from school leaders to teachers to students for improved school climate and student achievement in math and reading. In contrast, Atik and Celik (2020) reported that principals' use of empowering leadership was a significant predictor of teacher job satisfaction, psychological empowerment, and teacher trust in the principal, a finding reinforced in this study as teachers described empowerment, freedom, trust, and comfortability as important aspects of the empowering leadership of school leaders.

This study's participants discussed the importance of differentiation to meet students' cultural and linguistic needs, aligning with Kotob and Abadi (2019) who found that differentiating instruction resulted in improved academic achievement among struggling students. In this study, the participants considered differentiation an avenue for improving several subdomains of school climate, including cultural and linguistic competence, school participation, emotional safety, instructional environment, and discipline.

Positive reinforcement was found to be an effective way to handle discipline and manage the classroom among this study's participants. Participants also perceived discipline as having an influence on student achievement in math and reading, affirming prior research indicating that positive reinforcement via positive behavioral intervention was a way to improve behavior, effective emotion regulation, and prosocial behavior (Bradshaw et al., 2012) and that positive reinforcement correlates with improved student achievement in math and social outcomes (Simonsen et al., 2011).

Implications and Conclusion

A practical implication from this study is that rural school leaders should administer the EDSCLS (2019) instructional staff survey to their teachers to gauge their perceptions of school climate and improve any inadequate domains of school climate. The inadequacy of even one subdomain could have a negative effect on student achievement in math and

reading. Therefore, improving gaps in school climate could help to improve student achievement in math and reading and close the rural–suburban achievement gap.

Rural school leaders should offer professional development on SEL, differentiation, and positive reinforcement for school faculty to attend. Rural teachers and school leaders perceived these themes to positively influence school climate and student achievement.

As rural students underperform compared to their suburban peers (NAEP, 2022a; NAEP, 2022b), the purpose of this study was to explore teachers' and school leaders' perceptions of the effect of school climate on student achievement in math and reading at rural schools. In this study, the rural teachers and school leaders perceived the school climate domains (engagement, safety, environment) as having an effect on student achievement in math and reading. Participants suggested fostering the subdomains of school climate (cultural and linguistic competence, relationships, school participation, emotional safety, physical safety, bullying/cyberbullying, substance abuse, emergency readiness and management, physical environment, instructional environment, physical health, mental health, discipline) to positively influence other subdomains of school climate. Additionally, the participants perceived strong relationships, social-emotional learning, empowering leadership, differentiation, and positive reinforcement as means of effectively fostering the domains of school climate and student achievement in math and reading.

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