

CLASSROOM CLIMATE IN REMOTE SCHOOLS: INHIBITING FACTORS AND PEDAGOGICAL SOLUTIONS THROUGH FORMATIVE ASSESSMENT AND CONTEXTUAL LEARNING

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ABSTRACT

The purpose of this study is to examine the factors that hinder the classroom climate in remote schools and to explore formative assessment and contextual learning as pedagogical solutions. This study employs a literature review method by analyzing various relevant scientific sources regarding classroom climate, remote schools, formative assessment, and contextual learning. The outcomes of the study indicate that barriers to classroom climate in remote schools include limited educational resources, a shortage of teaching staff, students' socioeconomic conditions, inadequate school physical environments, as well as socio-cultural issues and school governance. These barriers outcome in low student engagement, suboptimal learning interactions, and a weak conducive learning atmosphere. The connection of resources to learners' real-life events as well as settings is contextual learning, and this study also shows how formative assessment is useful for teachers to continuously identify student needs, achievements, and obstacles that may challenge the students' learning. Hence, formative assessment and contextual learning can be considered as two complementary pedagogic solutions in establishing a more adaptive, participatory and meaningful classroom climate at remote schools.

Keywords: *classroom, formative assessment, contextual learning*

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BACKGROUND

A positive classroom climate includes not only a physical environment conducive to learning, which is safe, orderly and comfortable, but also shared expectations with teachers and students that effective teaching and effective learning can take place. A good classroom climate has the ability to engage students, incite them to create up with new ideas, as well help them not be threatened by others as Hapsari (2020) Thuściak (2022) Jabar (2023) & Božović et al., 2024 have discussed. Thus, the classroom climate is an influential factor to students' learning experiences and learning outcomes quality. However, efforts to create a positive classroom climate often face greater issues in rural, remote, or isolated schools, that generally have fewer resources compared to urban schools.

These limitations include inadequate learning materials, insufficient teacher training, poor classroom facilities, substandard building conditions, and limited availability of textbooks, all of that impact the teaching and learning process (Mampane, 2024; Stutz, 2015). Furthermore, teacher quality and technical competence in designing and delivering instruction also determine educational quality (Mahmud et al., 2023; Ghozali, 2020). The adequacy of teachers and the absence of facilities and infrastructure render learning improper (Wabang & Adam, 2020). Failure to respond to these diverse natural and social issues could create passive, non-interactive conditions and impact quality student learning experiences in remote places.

In these scenarios, there's a greater need for pedagogical work that considers not just what you are providing in terms of content, but how you take stock of students'

learning needs and how the climate will look differently in your classroom. Teachers have an essential role in changing the climate of the classroom through teaching efficacy showing appropriate learning strategies, classroom management and students participation in learning (Germain, 2020). One relevant approach that teachers can utilize is formative assessment. Formative assessment is an evaluation approach used by teachers to gather information about students' strengths and weaknesses in learning, that is then used to provide feedback and make adjustments to enhance ongoing teaching and learning (Fan & Guan, 2021). Teachers are expected to conduct formative assessment to provide feedback and make adjustments that enhance the achievement of curriculum objectives (Popham, 2008). In addition to formative assessment, improvements in the teaching and learning process in remote areas by an unconducive classroom climate is able to be achieved through contextual learning.

Contextual learning is grounded in several educational theories, comprising cognitive learning theory, constructivism, and experiential learning. These three theories emphasize that new information is more easily understood when linked to students' prior knowledge and its application in real life (Reddy & Revathy, 2024). One of its key elements is constructivism, that views students as constructing their knowledge through experiences and interactions by their surroundings. The educational framework needs to be continuously developed in line by decentralization patterns, taking into account and integrating local conditions in each region (Talan et al., 2021). Thus, the learning process becomes more meaningful

and personalized for each individual (Papatungan & Siradjang, 2025).

Research on classroom climate has been extensive, but it has primarily focused on the development of measurement instruments and the relationship among learning climate and various educational outcomes, comprising student well-being, perceptions of the learning environment, and the effectiveness of school interventions (Ellis et al., 2022; Shumakova et al., 2023; Nguyen et al., 2021; Çengel & Türkoglu, 2016). Previous research on classroom and school climate has generally focused on construct measurement, instrument standardization, rural–urban context comparisons, and the relationship among school climate and student well-being or the effectiveness of school-level interventions. Although these studies emphasize the importance of the learning climate in students' learning experiences and outcomes, there remains a limited body of research that specifically examines the classroom climate in remote schools by the perspective of barriers to daily learning while simultaneously offering pedagogical solutions that teachers can implement directly. Therefore, this study takes a different approach by focusing its analysis on barriers to classroom climate in remote schools and positioning formative assessment and contextual learning as pedagogical response strategies, thereby contributing to the integration of the context of remoteness, classroom climate issues, and student-need-based learning solutions.

METHOD

This study employs a semi-systematic review approach to examine the literature on classroom climate in remote schools, barriers, and solutions through formative

assessment and contextual learning. This approach was chosen because the research topic encompasses several interrelated concepts and requires a systematic yet flexible synthesis of the literature. The literature search was conducted through academic databases, comprising Scopus and Google Scholar, using the following keywords: *classroom climate*, *re -remote schools*, *rural schools*, *barriers*, *formative assessment*, and *contextual learning*. The selected articles were publications relevant to the research focus, available in English, and by full-text access. Irrelevant, duplicated, and non-academic articles were excluded by the review process. The research stages included literature identification, title and abstract selection, full-text review, grouping of articles into main themes, and narrative synthesis. Data analysis was conducted through qualitative content analysis to identify patterns of outcomes, relationships among concepts, and research gaps related to classroom climate in remote schools.

RESULTS AND DISCUSSION

Remote areas are often physically isolated by natural barriers comprising rivers, valleys, and hills, that hinder access and infrastructure development (Sulaeman & Sutrisno, 2015). These areas face demographic and economic issues, including limited access to essential services, lower household incomes, and population decline (Castillo et al., 2024). Remote areas often suffer by poor infrastructure, including inadequate school facilities and limited transportation, that restrict access to education (Tyas et al., 2024). Schools in remote areas frequently face geographic isolation that complicates transportation and limits access to

educational resources; long commutes for both students and teachers, that can ultimately reduce attendance and engagement in learning (Postrano & Fiesta, 2025). This affects the classroom climate.

Classroom climate refers to the learning atmosphere inside of the classroom (Popham, 2011). Classroom climate relates to the expectations of teachers and students that learning will proceed effectively. To create a positive classroom climate, interaction is required among teachers and students, as well as among students themselves. Classroom climate is defined as the quality of collective interpersonal relations among students in a school classroom (Thornberg et al., 2025). Infrastructure helps maintain an effective classroom climate. 4 However, I see that poor classroom conditions and lack of facilities barrier to building conducive learning environment. These kinds of conditions can be found in schools in remote locations.

1. Factors That Hinder the Classroom Environment in Remote Areas

Based on a review of several relevant studies by Scopus and Google Scholar, it was found that the factors hindering the classroom climate in remote areas are multidimensional and interrelated. These obstacles arise not only by limitations in physical school facilities but also by aspects of human resources, socioeconomic conditions, school governance, and the alignment of learning by the social and cultural context of the students. In general, the research outcomes indicate that the classroom climate in remote areas is influenced by the interaction among structural, pedagogical, social, and cultural

factors. The research outcomes are presented in Table 1.

Table 1. Factors That Hinder a Positive Classroom Climate

Author	Factors Hindering Classroom Climate in Remote Areas
Zebian, F. (2022).	Low salaries, unqualified prospective teachers, insufficient educational resources, and low-achieving students.
Rude, H., & Miller, K. J. (2018)	(a) the identity of rural education, (b) the impact of rural poverty and the accompanying decline in economic development in many rural communities, (c) the persistent personnel shortages in rural schools that create unique dynamics for the recruitment and retention of rural educators, (d) disparities in available resources targeted for education in rural communities compared to urban communities, and (e) the impact of increasing student diversity on rural schools in the United States.
Sullivan et al., 2018	Students' socioeconomic status, teacher shortages, and structural and policy measures
Muñoz-Tronco, F., & Riquelme, E. H. (2025).	Key physical aspects comprising space, lighting, and temperature were found to directly influence teachers' perceptions of classroom climate, by implications for students' emotional and academic outcomes.
Holmes et al. 2025	school leadership and governance, school safety management, and social factors comprising racism, bullying,

	and violence; and curriculum mismatch by culture
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One of the most significant factors is the scarcity of educational resources. Zebian's (2022) outcomes indicate that low teacher salaries, inadequate teacher candidate quality, limited educational resources, and low student achievement are factors that hinder the creation of a conducive classroom environment. These outcomes indicate that the quality of the classroom climate cannot be separated by the basic conditions of educational delivery. When schools are not supported by adequate resources, the learning process tends to be suboptimal, leading to a decline in the quality of classroom interactions.

Rude and Miller (2018) confirm these finding by highlighting that rural schools face challenges not only associated with the unique characteristics of rural education, but also the context of rural poverty and declining economic development, chronic shortages of staff in this area, resource gaps between those less-fortunate communities as oppose to more affluent urban centers, and growing diversity among students. These findings suggest that schools in rural areas are grappling with challenges far more complicated than simply a lack of facilities. Issues of rural educational identity and the distinctiveness of the local context also influence how schools create effective learning environments. On the other hand, poverty and the economic limitations of the surrounding community also contribute to weak support for the learning process.

Moreover, rural educational disadvantage is also theorised by Sullivan, McConney and Perry (2018) whose analysis

predicts that students' socioeconomic status, teacher shortages and education structures and policies are the key determinants of educational disadvantage occurring in rural locales. These results underscore that the quality of a classroom in rural areas does not rest solely on internal school parameters but also on macro policies over resource allocations, teacher provisioning and equitable access. So the difficulties encountered by remote schools are systemic and must be addressed both through policy and practice.

The physical environment of the school was also found to be a factor influencing classroom climate. Muñoz-Troncoso & Riquelme (2025) showed that physical elements such as space, light, and temperature directly influence teachers to perceive the climate of a classroom climate that in with this influences emotional and academic outcomes in students. These results echo what was demonstrated earlier — that the conditions of the physical learning space are an integral component to determining classroom climate. A small area, lack of light, or an unfamiliar temperature will reduce learning interactions quality and influence students and teachers comfort level when working through the learning process.

In addition, Holmes et al. Looking at their findings, it was determined that school leadership and governance, along with school safety measures and social factors (racism or bullying in students) all contributed to poor learning climates (2025). This study highlighted mismatched between curriculum and local culture are also a factor that makes student not engaged in learning. These results suggest that classroom climate in remote areas cannot only be described by

facilitation and teaching staff, but also the school’s capacity to create an environment which is safe, inclusive and relevant to students’ socio-cultural lives.

To summarize, the research findings show the factors causing poor classroom environment in remote areas could be classified into five categories, including limited educational resources, teaching staff problems, socioeconomic conditions of students and community leads to poor academic outcomes (in this case is a indication of bad classroom environment), deficiencies regarding school’s physical infrastructure alongside socio-cultural issues & schools governance. Among these barriers, limited resources, teacher shortages and socioeconomic conditions seem to be the most commonly mentioned in studies. On the other hand, the physical environment, school security and cultural mismatches also serve as additional aggravating factors that complicate classroom climate problems in rural contexts.

These results suggest that the dynamics of classroom climate in rural areas is multi-faceted, insomuch that a single cause is insufficient. The classroom climate reflects the interplay between school facilities, teacher capacity and student backgrounds — with social and cultural context in which learning occurs. Culturally responsive teaching practices have a greater impact on classroom interactions between teachers and students (Kwaah et al., 2023). Hence, recognizing these hurdles is important so as to come up with suitable pedagogical remedies, not least through formative assessment and contextual learning as tools for effective and contextualized teaching that will create room for a more flexible,

participatory, and meaningful learning arena.

2. Formative Assessment as the Basis for Identifying Students’ Learning Needs

Based on the outcomes of this review, formative assessment is considered one of the key strategies in learning because it provides useful information for both teachers and students throughout the learning process. To clarify this role, the following presents the outcomes of a review of several studies on the functions of formative assessment and its relevance to improving learning

Table 2. The Functions of Formative Assessment

Author	The Functions of Formative Assessment
Zaibout et al., 2024.	Teachers who implement formative assessment methods and techniques are better prepared to address students’ learning needs by adapting and differentiating their pedagogy, thereby improving student performance and equity in outcomes
Schütze et al., 2018	Formative assessment serves as an effective framework for improving learning because it focuses on evaluating student performance, and the outcomes of this assessment are used to enhance the teaching and learning process
Bhusnur et al., 2023	Formative assessment is a crucial component of student evaluation because it comprehensively assesses students, helps them monitor their learning progress, identifies gaps among their current abilities and desired

	skills, and has the potential to be automated to enhance the efficiency and accuracy of the assessment process.
Nurhijah et al., 2020	The implementation of formative assessment in the classroom is a key strategy for developing skills and helping teachers design appropriate learning strategies tailored to students' learning needs.
Masri, 2025	Formative assessment is able to be understood as a compass in learning because it helps educators determine students' learning progress, continuously monitor the process, identify areas for improvement, and adjust teaching strategies as needed.

Based on a review of several studies, formative assessment plays a crucial role in supporting the quality of learning. In general, formative assessment serves not only as a tool for evaluating students' learning achievements but also as a means of identifying learning needs, monitoring progress, and adjusting teaching strategies to make them more effective and better suited to students' circumstances.

The outcomes of Zaibout et al. (2024) indicate that teachers who implement formative assessment methods and techniques are better prepared to address students' needs through pedagogical adaptation and differentiation. This implementation leads to improved student performance while promoting equity in learning outcomes. These outcomes demonstrate that formative assessment serves as a foundation for teachers to deliver more adaptive instruction.

Schütze et al. (2018) highlight how formative assessment is a powerful framework to improve learning. It

contributes to the focus on assessing student performance, whose results are subsequently utilized in enhancing the teaching and learning process. Formative assessment turns, therefore, into an essential aspect of continuous learning progress and does not cease when the evaluation finishes.

Furthermore, Bhusnur et al. (2023) showcase that formative assessment is an essential part of student evaluation as it provides a holistic view of assessment. This evaluation guides the students to keep track on their learning, to detect gaps between current and coveted competencies, and can significantly improve both reliability and objectivity of assessment. These results of formative assessment not only help teachers but also contribute to students reflect their learning.

Nurhijah et al. (2020) conducted a systematic review on classroom formative assessment, which they reported as an effective practice for developing skills and also aiding teachers design appropriate level instructional strategies in accordance with learner needs. This highlights the prominence of formative assessment as central to pedagogical decision-making.

On the other hand, formative assessment is like a compass in learning (Masri, 2025) as it aids educators to understand how students are progressing with their learning, through continuous monitoring of the process and determining improvement areas alongside adjusting teaching strategies accordingly. These results show that formative assessment guides the learning process.

Overall, the research outcomes indicate that the functions of formative assessment is able to be summarized into several key aspects: as a tool for diagnosing students' learning needs, a means of monitoring learning progress, a basis for adjusting teaching strategies, a mechanism for improving the quality of learning, and a

support for equitable learning outcomes. Thus, formative assessment plays a strategic role in creating learning that is more adaptive, effective, and centered on students' needs.

3. Contextual Learning as a Pedagogical Solution

Contextual learning is regarded as one of the most effective approaches to improving the quality of learning because it emphasizes active student engagement and the relevance of the material to real life. To clarify this role, the following presents a review of several studies on contextual learning.

Table 3. The Importance of Contextual Learning

Author	The Importance of Contextual Learning
Reddy & Revathy (2024).	Contextual learning is a pedagogical approach that presents learning material through various active learning techniques so that students can relate their existing knowledge to new material, then build new understanding through the processes of analysis and synthesis in learning.
Selvianiresa & Prabawanto (2017)	The <i>Contextual Teaching and Learning</i> (CTL) approach is a learning approach that actively involves students in the learning process so that they can discover the concepts being studied based on their existing knowledge and experiences.
Paputungan & Siradjang (2025).	Contextual learning fosters deeper understanding by connecting lesson content to real-life situations,

	thereby developing critical thinking, problem-solving skills, and engaging students in the learning process.
Hermansyah et al., 2019	Contextual learning model is one kind of teaching approach which is put emphasis on active engagement of students in finding the material that being studied and relate them into real-world conditions so it can touch the daily life.
Yan et al. 2024	A contextual learning environment is crucial for language learners in developing speaking skills because it allows them to use speaking skills appropriately in context, adapt language use to various situations, and enhance language proficiency and communication effectiveness.

According to the findings, contextual learning is an approach that sees students as active participants in learning. As Reddy and Revathy (2024) explain, contextual learning helps to link prior knowledge with the new material through active-learning methods. Then it builds a higher understanding by analysis and synthesis. The results show that contextual learning do not just to transfer the content, but also develop the process of deeper thinking.

This is in line with that of Selvianiresa and Prabawanto (2017) which states that Contextual Teaching and Learning will involve students actively searching for concepts based on the knowledge and experience they have. This most certainly reveals that contextbased learning is not a passive, but knowledge-based construction process; Specifically

said, if students were not fed information but build own knowledge through experience.

Results from Paputungan and Siradjang (2025) show that contextual learning is effective to help students better understand the materials presented because they are relevant in real-life situations. In addition, it also promotes the flourishing of critical thinking skills, problem-solving skills, and student engagement in learning as well. So, contextual learning not only has its advantages for the sake of understanding material but also helps develop higher-order thinking skills.

The work of Hermansyah et al. also displays a similar result (Pandeglang et al., 2019), which explains more about contextual learning models focused on the active role of students in investigating material and connecting them with real problems and its application in everyday life. The result then shows that contextual learning has pragmatic orientation, meaning that the outcome of the learning process becomes more functional and real for students.

Meanwhile, Yan et al. (2024) show that language learners need a contextual learning environment, especially in developing speaking skills. Contextual learning helps students use language as suited to a very particular context, and modify how they use language adapted to the situation in question, improving their speaking skills and communicative competence. These findings indicate that contextual learning applies on the specific skill level as well, especially skills that must be practiced in context.

Contextual learning overall has characteristics that include connecting information to students' life experiences, motivating them as they learn, providing understanding through knowledge building and collaborative effort while building critical thinking skills applicable in a real-world setting (Cennamo & P. 106). Thus, you can simply comprehend that contextual

learning is an approach which increases the significance, engagement and relevance of learning.

4. Synthesis of the Relationship among Barriers and Solutions

The relationship among barriers and solutions indicates that classroom climate issues in remote schools cannot be addressed through a one-size-fits-all teaching approach. A standardized teaching approach is ineffective in addressing issues comprising students' varying abilities and backgrounds (Ali & Sylvester, 2016). The diversity of student abilities, resource limitations, low learning participation, and the mismatch among instructional materials and students' real-life contexts require teachers to implement more adaptive strategies. In this context, formative assessment serves as the first step to continuously identify students' needs, difficulties, and learning progress. This aligns by the outcomes of Ningsi et al. (2024), who state that a formative approach effectively fosters student enthusiasm, active participation, and student responsiveness to learning, while facilitating curriculum implementation tailored to student needs. Information obtained by formative assessment subsequently serves as the foundation for teachers to design contextual learning that aligns by students' experiences, environments, and cultures. Thus, formative assessment and contextual learning have a complementary relationship: formative assessment helps teachers understand students' learning needs, while contextual learning serves as a pedagogical response that makes learning more relevant, participatory, and meaningful. Through this relationship, issues related to the classroom

climate in remote schools is able to be addressed more effectively.

CONCLUSION

Based on the outcomes of the study, it is able to be concluded that the classroom climate in remote schools is influenced by various constraints, comprising limited educational resources, a shortage of teachers, socioeconomic conditions, the school's physical environment, as well as sociocultural and governance issues. These limitations affect the nature of pedagogical interactions, student engagement, and the classroom learning environment. In this insight, formative assessment and contextual learning can be looked at as complementary pedagogy solutions to some extent, where the former helps teachers identify students' need for their learning while the latter allows the curriculum to be adapted to experience and environment around the learner. Both are, therefore, essential to creating a more adaptive, participatory and meaningful classroom climate in remote schools.

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