

Construction and Validation of the School Environment Scale for English (SESE)

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Abstract

Overview: This study introduces the School Environment Scale for English (SESE), a rigorously developed instrument designed to assess environmental factors influencing English language learning within school settings. The scale was developed based on established theoretical frameworks of the school environment and refined through empirical validation methodologies.

Methodology: This Descriptive research involved a multiphase process encompassing item generation, expert review, pilot testing, and comprehensive statistical analysis. Data were collected from samples of 100 and 296 secondary students for item analysis and reliability testing of the scale.

Results: Internal consistency measures demonstrated strong reliability (Cronbach's $\alpha = 0.909$, split-half approach = 0.876), with subscale coefficients ranging from 0.516 to 0.768. The final scale has 38 items in five dimensions: (1) Infrastructure and English Exposure at School, (2) English Teacher's Support and Interaction, (3) English Teaching-Learning Process, (4) Classmates Influence on English Learning, and (5) Technology and Internet Uses for English Learning.

Findings: The findings highlight the importance of a well-supported school environment in facilitating English language acquisition and underscore the SESE's utility as a diagnostic tool for educators and policymakers.

Suggestion: By providing a validated framework tailored to English learning contexts, the SESE advances both theoretical understanding and practical application in educational measurements. Future research could extend the scope of the SESE through predictive validation, cross-cultural adaptation, application to different school subjects, longitudinal studies, and comparative studies to strengthen its global relevance.

Keywords: English, Item Analysis, Reliability, Validity, School Environment Scale for English (SESE)

Introduction

The quality of the school environment is a critical determinant of academic success in many domains, particularly language learning. A supportive and well-resourced environment can enhance learners' motivation and performance (Hanaysha et al., 2023; Kweon et al., 2017; Tapia-Fonllem et al., 2020). The significance of the school environment in fostering academic achievement has been widely acknowledged in educational research, with scholars emphasising that the physical, social, and psychological conditions within a school directly impact students' cognitive and emotional development (Firman & Sandiarsa, 2024; Long et al., 2020; Podiya et al., 2025; Rusticus et al., 2022). The school environment is a fundamental component of the educational process, influencing students' intellectual and social development (Fraser, 1998; Hassani, 2024; Idris et al., 2025; Zullig et al., 2010).

The importance of school climate has also been recognised in various educational policies and reports. The Indian Education Commission (1964–66) underscored that ‘the destiny of a nation is shaped within its classrooms’, highlighting the necessity of a conducive learning atmosphere in schools. [Moos \(1979\)](#) introduced a framework for evaluating educational environments, arguing that school climate significantly affects students’ academic performance and their personal development. [Kelly \(2010\)](#) further refined this perspective by highlighting the importance of environmental factors in schools in shaping language acquisition.

Recent empirical studies have reinforced the significance of school climate in shaping student outcomes. The school environment encompasses multiple dimensions, including classroom infrastructure, teacher-student interactions, curriculum resources, and peer collaboration ([Barrett et al., 2019](#); [Lyons et al., 2018](#); [Wang, 2025](#)). A positive school environment fosters student engagement, enhances academic performance, and promotes emotional well-being ([Bochaver et al., 2022](#); [Wang & Degol, 2016](#)). Studies have shown that students who perceive their school climate as supportive and inclusive exhibit higher levels of motivation and academic persistence ([Balaguer et al., 2022](#); [Klik et al., 2023](#); [Zhang & He, 2025](#)). Conversely, an unsupportive school environment can lead to disengagement, lower academic achievement, and increased stress levels among students ([Chitrakar and Nisanth, 2023](#); [García-Moya et al., 2023](#); [Wilkie et al., 2023](#)).

In the context of English language learning, school climate plays a particularly important role. Studies have shown that access to well-equipped classrooms, supportive teachers, and interactive peer networks enhances language proficiency and learners’ confidence ([Katal et al., 2021](#); [Wu & Dong, 2024](#)). Additionally, the availability of structured curriculum resources, such as textbooks and digital learning tools, has been linked to improved language outcomes ([Aladini et al., 2024](#); [Bui, 2021](#)). The importance of peer collaboration in English language learning has been widely studied. Research indicates that students who engage in collaborative learning activities demonstrate higher levels of language proficiency and confidence ([Arta, 2018](#); [Bai et](#)

[al., 2025](#); [Li, 2025](#)). The presence of interactive learning environments, where students can engage in discussions, group projects, and peer feedback, fosters a constructivist approach to language acquisition ([Janesarvatan & Asoodar, 2024](#); [Shaddad & Jember, 2024](#); [Le & Nguyen, 2024](#); [Steenkamp & Brink, 2024](#)). Additionally, the availability of digital learning tools has been linked to improved English outcomes. Many investigators have studied the impact of technology-rich learning environments on student engagement and found that access to digital resources, multimedia content, and online learning platforms significantly enhances language acquisition ([Dai et al., 2023](#); [Hasumi & Chiu, 2024](#); [Prakash & Barathi, 2022](#)). The integration of artificial intelligence (AI) and adaptive learning technologies in English language education has further expanded opportunities for personalised instruction and skill development ([Alobaid, 2020](#); [Kundu & Bej, 2025](#); [Yaseen et al., 2025](#)).

Statement of the Problem and Research Gap

Despite the growing recognition of environmental factors in language education, existing assessment tools remain too general and fail to capture the specific nuances of English instruction. Current instruments, such as general school climate scales, provide valuable insights into overall educational settings but do not adequately measure dimensions uniquely tied to English learning, such as exposure to English resources, teacher-student interaction in language classrooms, and the role of technology in language acquisition. This lack of a specialised, validated tool creates a gap in both research and practice. Therefore, by identifying this gap, the researchers intended to develop a tool focusing on the English subject in the classroom and school environment to diagnose challenges and implement targeted interventions in English language education. Justification and Objectives of SESE’s development The development of the School Environment Scale for English (SESE) directly addresses this gap in the availability of specific tools. By integrating insights from [Moos \(1979\)](#), [Kelly \(2010\)](#), [Wang and Degol \(2016\)](#), [Bochaver et al. \(2022\)](#), [Rani and Jaidka \(2023\)](#), and [Subramanian and Kalaichelvan \(2025\)](#), the SESE provides a context-specific, psychometrically robust

instrument tailored to English language learning. Unlike existing scales, the SESE systematically evaluates five critical dimensions—infrastructure and exposure, teacher support, teaching-learning processes, peer influence, and technology use—that directly shape students’ English language acquisition. Its development ensures both theoretical alignment with established models of educational measurement and practical utility for educators, administrators, and policymakers seeking to improve language-learning environments. Its development aligns with established models of educational measurement, ensuring that it captures the structural, social, and psychological dimensions of the school environment in the Brazilian context. In this context, the present study was guided by the following objectives:

1. To provide empirical evidence supporting the role of the school environment in shaping students’ English language learning.
2. To develop a reliable and valid School Environment Scale for English (SESE).

Methodology

Study Design

The Quantitative Descriptive Survey research method was used to describe and analyse the data. A questionnaire prepared by the researchers was used for data collection. Secondary students from different districts of West Bengal, India, were selected as samples for the study using a random sampling technique.

Sampling Design

First, 100 secondary students were randomly selected from two schools in Nadia district, West Bengal, for the initial application of the self-constructed SESE, which contained 40 items. These data were used for the item analysis. Furthermore, 296 secondary students were selected by simple random sampling from different schools situated in Kolkata, Nadia, and North 24 Parganas in West Bengal. Cronbach’s alpha and the split-half approach were employed to evaluate the scale’s reliability using these data.

Table 1 Distribution of Samples Taken for Stage I (Item Analysis)

Number of Schools (2)	Male	Female	Total
School -I	18	21	39
School -II	28	33	61
Total	46	54	100

Table 2 Distribution of Samples Taken for Stage II (Reliability Analysis)

Districts	Number of Schools (6)	Male	Female	Total
Kolkata	School -I	20	24	44
	School -II	28	25	53
Nadia	School -I	23	25	48
North 24 Parganas	School -I	19	20	39
	School -II	26	21	47
	School -III	30	35	65
	Total=	146	150	296

Tables 1 and 2 show the distribution of samples used in this study. For the initial application of the SESE and item analysis, 100 students from two schools in the Nadia district were randomly selected for the study. For the reliability analysis, 296 students were selected from different schools across the three districts of West Bengal: two schools in Kolkata, one school in Nadia, and three schools in North 24 Parganas.

Instrument Development

Forty items were initially generated for the School Environment Scale for English (SESE) based on a comprehensive literature review of existing school environment measures ([Bochaver et al., 2022](#); [Kelly, 2010](#); [Rani & Jaidka, 2023](#); [Subramanian & Kalaichelvan, 2025](#)) and an examination of the contextual factors influencing English language learning. The SESE was followed by pilot testing and item analysis. The items were refined for content and face validity based on feedback from five educational experts. The SESE contains five dimensions: (1) Infrastructure and English Exposure at School, (2) English Teacher’s Support and Interaction, (3) English Teaching-Learning Process, (4) Classmates Influence on English Learning, and (5) Technology and Internet Uses for English Learning.

Use of a 3-point Likert-Type Scale

To evaluate several elements of the school learning environment that support English language acquisition, the SESE was created using a Likert-type scale. A 3-point Likert-type scale was chosen to ensure ease of use and speed of completion while maintaining effective measurement sensitivity. Studies have suggested that while preserving validity and reliability, shorter Likert scales lessen response bias, especially in younger populations (Coombes et al., 2021; Obon et al., 2025). The SESE contains both positive and negative items. The positive items are counted as Always=3, Sometimes=2, and Never=1, whereas the negative items are Always=1, Sometimes=2, and Never=3.

Pilot Testing

One hundred secondary pupils from two schools in Nadia, West Bengal, were randomly selected for this pilot study. Before collecting data on a large scale, pilot testing allows researchers to improve their tools and spot possible problems (Hassan et al., 2006; Lowe, 2019; Renuse, 2024). A self-administered version of the SESE, containing 40 items, was given to them. To eliminate poor items from the scale, the data were subjected to item analysis using a t-test.

Statistical Analysis

This study used a range of statistical methods. An independent sample t-test was used to perform the item analysis. The Split-half technique and Cronbach's alpha were then used to confirm the scale's reliability. Statistical analyses were performed using SPSS (version 31.0.0.0) and Microsoft Excel.

Result

Item analysis

The practice of evaluating test questions by computing test respondents' responses and determining how effectively they can differentiate between high and low scores is known as item analysis (McCowan & McCowan, 1999; Rezigalla et al., 2024). In addition, eliminating or modifying items that do not significantly contribute to the total scale enhances the validity and reliability of the tests (Boateng et al., 2018; Coombes et al., 2021). The responses of the top 27% of students with the

highest scores and the bottom 27% with the lowest scores were compared using an independent sample t-test for each item (Kelley, 1939) to ascertain whether each item successfully differentiated between pupils whose school settings were conducive to learning English and those whose were not.

Table 3 Discrimination between the Upper Group and the Lower Group

Items	Groups	Mean	SD	df	t	p
SESE1	High	2.852	0.362	52	4.878	0.000**
	Low	2.000	0.832			
SESE2	High	2.852	0.362	52	5.200	0.000**
	Low	1.889	0.892			
SESE3	High	2.926	0.385	52	1.954	0.056
	Low	2.630	0.688			
SESE4	High	2.704	0.465	52	5.592	0.000**
	Low	1.741	0.764			
SESE5	High	2.778	0.424	52	6.986	0.000**
	Low	1.630	0.742			
SESE6	High	2.778	0.506	52	5.068	0.000**
	Low	1.778	0.892			
SESE7	High	1.704	0.465	52	3.374	0.001**
	Low	1.222	0.577			
SESE8	High	2.852	0.362	52	4.665	0.000**
	Low	2.000	0.877			
SESE9	High	2.852	0.362	52	6.352	0.000**
	Low	1.778	0.801			
SESE10	High	2.889	0.320	52	7.341	0.000**
	Low	1.704	0.775			
SESE11	High	2.852	0.534	52	9.301	0.000**
	Low	1.444	0.577			
SESE12	High	2.889	0.320	52	11.041	0.000**
	Low	1.481	0.580			
SESE13	High	2.704	0.724	52	6.506	0.000**
	Low	1.444	0.698			
SESE14	High	2.556	0.577	52	3.681	0.001**
	Low	1.778	0.934			
SESE15	High	2.667	0.620	52	2.326	0.024*
	Low	2.185	0.879			
SESE16	High	2.630	0.742	52	5.119	0.000**
	Low	1.593	0.747			
SESE17	High	3.000	0.000	52	7.148	0.000**
	Low	1.926	0.781			

SESE18	High	2.963	0.192	52	8.410	0.000**
	Low	1.963	0.587			
SESE19	High	2.889	0.320	52	4.947	0.000**
	Low	2.000	0.877			
SESE20	High	3.000	0.000	52	14.000	0.000**
	Low	1.444	0.577			
SESE21	High	2.963	0.192	52	5.316	0.000**
	Low	2.222	0.698			
SESE22	High	3.000	0.000	52	7.932	0.000**
	Low	1.778	0.801			
SESE23	High	2.815	0.396	52	7.602	0.000**
	Low	1.815	0.557			
SESE24	High	2.926	0.267	52	9.762	0.000**
	Low	1.519	0.700			
SESE25	High	2.926	0.267	52	7.485	0.000**
	Low	1.778	0.751			
SESE26	High	2.556	0.751	52	4.149	0.000**
	Low	1.630	0.884			
SESE27	High	2.889	0.320	52	6.970	0.000**
	Low	1.704	0.823			
SESE28	High	2.852	0.362	52	5.087	0.000**
	Low	1.926	0.874			
SESE29	High	2.704	0.465	52	5.746	0.000**
	Low	1.704	0.775			
SESE30	High	2.815	0.396	52	5.265	0.000**
	Low	1.852	0.864			
SESE31	High	2.889	0.320	52	7.194	0.000**
	Low	1.963	0.587			
SESE32	High	3.000	0.000	52	8.266	0.000**
	Low	1.926	0.675			
SESE33	High	2.778	0.641	52	4.558	0.000**
	Low	1.926	0.730			
SESE34	High	2.667	0.480	52	5.574	0.000**
	Low	1.630	0.839			
SESE35	High	2.593	0.636	52	5.170	0.000**
	Low	1.667	0.679			
SESE36	High	2.407	0.501	52	3.791	0.000**
	Low	1.741	0.764			
SESE37	High	2.593	0.501	52	2.675	0.010*
	Low	2.074	0.874			
SESE38	High	2.815	0.483	52	5.054	0.000**
	Low	1.852	0.864			
SESE39	High	2.852	0.362	52	4.225	0.000**
	Low	2.148	0.718			

SESE40	High	2.481	0.580	52	1.727	0.090
	Low	2.148	0.818			

Note: ** 0.01 level of significance, * 0.05 level of significance

Table 3 displays the results of the item analysis using a t-test of the 40 items of the School Environment Scale for English (SESE). SESE15 and SESE37 show statistically significant differences between the high- and low-scoring groups at the 0.05 level of significance (Kwak, 2023), whereas the rest of the 36 items show significant differences and variations between the high- and low-scoring groups at the 0.01 level of significance (Zhu, 2016). However, the scores for SESE3 and SESE40 did not significantly differ between the high- and low-scoring groups. Thus, the two items, SESE3 and SESE40, were removed from the scale.

Validity

To ensure the validity of the School Environment Scale for English (SESE), face and content validity assessments were conducted in this study. To ascertain whether the instrument measured the intended constructs, face validity was investigated (Masuwai et al., 2024; Ranganathan et al., 2024). Five subject experts examined the items to ensure they were consistent with the theoretical frameworks, clear, and relevant. Pilot research, which involved 100 secondary school students, was conducted to adjust the scale and evaluate students' understanding of the items. The content validity of the SESE was also assessed by the researchers in this study. Ensuring that an instrument sufficiently covers every facet of the concept being measured is known as content validity (Lim, 2024; Shrotryia & Dhanda, 2019). By following these validity criteria, the SESE scale is guaranteed to be valid, psychometrically sound, and able to measure the effects of the school environment on English language ability.

Reliability

The stability and uniformity of a measurement tool over numerous uses is referred to as reliability (Reynolds et al., 2021; Segal and Coolidge, 2018). After the item analysis, the School Environment Scale for English (SESE) had 38 items. The scale

was then subjected to reliability analyses using Cronbach’s alpha and the split-half method.

Cronbach’s Alpha

Cronbach’s alpha is frequently used in psychometric research to evaluate the internal

consistency of a scale and to ensure that every item significantly contributes to the assessment of the construct (Izah et al., 2024; Taber, 2018). The scale’s internal consistency measures demonstrated strong reliability (Cronbach’s $\alpha = 0.909$), and the subscale coefficients ranged from 0.516 to 0.768 (Table 4).

Table 4 Cronbach’s Alpha of the School Environment Scale for English (SESE) and its Dimensions

Dimensions	n	Total item	Cronbach’s Alpha
Infrastructure and English Exposure at School	296	7	0.516
English Teacher’s Support and Interaction	296	8	0.762
English Teaching-Learning Process	296	8	0.768
Classmates Influence on English Learning	296	8	0.675
Technology and Internet Uses for English Learning	296	7	0.537
SESE	296	38	0.909

Spearman-Brown Reliability

The reliability of the entire scale was estimated using the Spearman-Brown formula (Kingston & Tiemann, 2010; Kuder & Richardson, 1937; Spearman, 1910). For the application of the split-half approach, the test items were divided into two halves

using an odd-even split, and the correlation between the two halves was computed. The Spearman-Brown corrected reliability coefficient was 0.876, confirming strong internal consistency, as shown in Table 5.

Table 5 Split-Half Method with Spearman Brown Coefficient Reliability of the School Environment Scale for English (SESE)

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	.864
		N of Items	19a
	Part 2	Value	.809
			19b
Total N of Items			38
Correlation Between Forms			.780
Spearman-Brown Coefficient	Equal Length		.876
	Unequal Length		.876
Guttman Split-Half Coefficient			.871
a. The items are: Item 1, Item 3, Item 5, Item 7, Item 9, Item 11, Item 13, Item 15, Item 17, Item 19, Item 21, Item 23, Item 25, Item 27, Item 29, Item 31, Item 33, Item 35, Item 37.			
b. The items are: Item 2, Item 4, Item 6, Item 8, Item 10, Item 12, Item 14, Item 16, Item 18, Item 20, Item 22, Item 24, Item 26, Item 28, Item 30, Item 32, Item 34, Item 36, Item 38.			

Final Scale

The researchers used both the split-half method and Cronbach’s alpha tests which together demonstrated the psychometric soundness of the SESE scale, offering a trustworthy indicator of how the school environment affects the English language competency of secondary students. Initially, the

scale comprised 40 items, with eight items in each dimension. However, after item analysis, reliability, and validity testing, the final School Environment Scale for English (SESE) consisted of 38 items in five dimensions. The item distribution in the scale among the dimensions is shown in Table 6 below.

Table 6 Item distribution in the School Environment Scale for English (SESE)

Sl. No.	Dimensions	Item number		Total items
		Positive items	Negative items	
1.	Infrastructure and English Exposure at School	1, 3, 4, 5, 7	2, 6	7
2.	English Teacher's Support and Interaction	8, 10, 11, 12, 13, 14	9, 15	8
3.	English Teaching-Learning Process	16, 18, 19, 21, 22, 23	17, 20	8
4.	Classmates Influence on English Learning	24, 25, 27, 28, 30, 31	26, 29	8
5.	Technology and Internet Uses for English Learning	32, 33, 34, 36, 37, 38	35	7
Total items of the School Environment Scale for English (SESE)				38

Discussion

The School Environment Scale for English (SESE) is a relevant and dependable tool for evaluating school-based influences on English-language acquisition. The item analysis using an independent sample t-test confirmed that each item effectively differentiated between respondents with varying perceptions of the school environment. Face and content validity evaluations further strengthened the credibility of the SESE. All subscales had strong Cronbach's alpha values (0.516 to 0.768), confirming the instrument's internal consistency and enhancing its dependability for educational research and real-world applications. Furthermore, split-half reliability, evaluated using the Spearman-Brown formula, confirmed the SESE's stability and ability to produce consistent results across different item groupings. The findings highlight the robust psychometric properties of the SESE, validating its effectiveness as an assessment tool for evaluating school climate in English-language learning settings.

The SESE also aligns with previous school climate assessments, such as the School Climate Questionnaire ([Bochaver et al., 2022](#)) and the Construction and Standardization of School Environment Scale ([Rani & Jaidka, 2023](#)). While these instruments provide broad assessments of school climate, the SESE offers a specialised focus on English language learning, addressing the specific environmental factors that influence language acquisition. Compared to general school climate measures, the SESE provides greater specificity in evaluating teacher support, teaching-learning processes, infrastructural resources, peer interaction, and the use of technology within English language classrooms. This differentiation makes it more

applicable to educators and policymakers, enabling targeted initiatives to improve the language-learning environment.

Limitations

Although the SESE has strong psychometric qualities, it has several limitations. First, this study was conducted within a specific regional context, which may limit its generalisability across various educational settings, such as urban and rural schools, foreign institutions, and under-resourced contexts. Second, the present scale considers only secondary school students. Third, this study focuses specifically on the English subject and its acquisition by secondary students.

Suggestions for Future Studies

Future researchers and practitioners should examine the predictive validity of the SESE by linking school-environment scores to measurable English-proficiency outcomes.

Their application could be extended through longitudinal research to capture changes over time.

Cross-cultural validation across diverse educational contexts and comparisons between international and national institutions should be conducted.

The scale could be adapted by researchers to measure the achievement of students in other school subjects in similar environments.

Researchers can use the scale to measure the English acquisition of students in different class levels.

Conclusion

The present study established the School Environment Scale for English (SESE) as a

psychometrically sound instrument for evaluating the environmental conditions that influence English learning in school settings. Through a rigorous process of item development, expert validation, and statistical analysis—including item discrimination using t-tests, content and face validation, and reliability testing through Cronbach’s alpha and split-half methods—the SESE has demonstrated strong internal consistency, validity, and reliability. The final scale, comprising five empirically supported dimensions—Infrastructure and English Exposure at School, English Teacher’s Support and Interaction, English Teaching-Learning Process, Classmates’ Influence on English Learning, and Technology and Internet Uses for English Learning—offers a comprehensive framework for understanding how school climate shapes language acquisition.

Theoretically, the SESE advances the field of educational measurement by extending general models of school climate (Moos, 1979; Kelly, 2010; Wang & Degol, 2016) into a domain-specific framework for English-language learning. It integrates structural, psychosocial, and technological dimensions, thereby enriching existing theories of the school environment with a nuanced perspective on language acquisition. This contribution bridges the gap between broad school climate research and the specific demands of English education, offering scholars a validated tool for exploring the interplay between the environment and language proficiency. Practically, the SESE provides educators, administrators, and policymakers with a diagnostic instrument that can identify strengths and weaknesses in school environments, guide targeted interventions, and monitor progress over time. Its multidimensional structure enables schools to evaluate not only physical infrastructure and teacher support but also peer dynamics and technology integration, which are increasingly critical in contemporary classrooms. By offering actionable insights, the SESE empowers stakeholders to design evidence-based strategies that foster inclusive, supportive, and resource-rich environments for English learners.

As English continues to serve as a global medium of instruction and communication, tools such as the SESE are essential for ensuring that learning environments are equitable and conducive

to linguistic development. In summary, the SESE contributes uniquely to both theory and practice: it enriches scholarly understanding of school climate in language education while equipping practitioners with a reliable framework to improve English learning conditions. Future research should extend its application through predictive validation, cross-cultural adaptation, and longitudinal studies to strengthen its relevance.

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