



TEACHING EXPERIENCE AND PEDAGOGICAL KNOWLEDGE AND APPLICATION OF THE CLASSROOM ENVIRONMENT AMONG EARLY CHILDHOOD TEACHERS IN GHANA

Samuel Oppong Frimpongⁱ,
Rebecca Tetteh,
Justina Adu,
Esther Safowaa
University of Education,
Winneba, Ghana

Abstract:

This study examined teachers' professional backgrounds, teaching experience, and understanding of classroom environmental principles and how they are applied in Early Childhood Education (ECE) settings in Ghana's Asuogyaman District. Vygotsky's Sociocultural Theory and Bronfenbrenner's Ecological Systems Theory were used to elicit environmental factors, teacher expertise, and contextual conditions that might be useful in influencing learners' attention. 122 ECE teachers completed a structured questionnaire as part of the study's quantitative descriptive survey design. Three hypotheses about the knowledge, professional qualifications, and classroom environment application of teachers were tested using descriptive statistics, Welch ANOVA, Kruskal-Wallis H test, and one-way ANOVA. The findings showed that although teachers' understanding of classroom environmental principles was generally between moderate and high, there were no statistically significant differences in knowledge or application based on teaching experience or professional qualification in areas like classroom layout, lighting, ventilation, learning centres, and teacher-learner interactions. These findings could imply that the district's classroom environmental practices are primarily shaped by systemic and infrastructure limitations rather than individual teacher-level factors. The study comes to the conclusion that systemic interventions, such as improved infrastructure, focused professional development, and resource support, are necessary to improve ECE classroom environments rather than depending only on teaching experience or academic credentials.

Keywords: teaching experience, teacher pedagogical knowledge, classroom environment, learner attentiveness, early childhood education

ⁱ Correspondence: email reprods@yahoo.co.uk

1. Introduction

Early Childhood Education (ECE) is essential for developing the cognitive, emotional, social, and physical foundation required for lifelong learning, spanning from birth to roughly age eight (UNESCO, 2021; Nawaz, Ashraf & Siddique, 2021). The classroom setting, which has a significant impact on learning, engagement, and attentiveness, is one of the environmental elements that influence young learners at this stage. One of several crucial elements of a child's early development is the quality of the classroom (Vandenbroeck *et al.*, 2018). How the ECE classroom is set up can have a significant impact on learners' motivation, interest, and concentration (Oppong Frimpong, 2019; Vandenbroeck *et al.*, 2018).

A well-organized classroom with child-friendly designs, suitable lighting, ventilation, a wealth of educational resources, and responsive teacher-learner interaction improves learners' focus and readiness to learn (Diamond & Ling, 2020). The proper organisation and management of the environment emanate from training, but importantly, teaching experience. Teachers have a significant influence on the classroom experience because they are important participants in the early learning process. (Gore *et al.*, 2016)

Teachers' practical knowledge is sharpened through teaching experience, allowing them to respond to behavioural cues, make well-informed decisions, and modify the environment to suit the needs of learners (Blair & Raver, 2015; Hamre & Pianta, 2021).

2. Review of Related Literature

The theoretical literature review for this study is based on Vygotsky's Sociocultural Theory (1978) and Bronfenbrenner's Ecological Systems Theory (1977). Both theories highlight the significance of social and environmental interactions in cognitive development. Bronfenbrenner's Ecological Systems Theory, which emphasizes how nested systems shape children's behavior, places the classroom at the centre of developmental influence. As a microsystem, the physical layout, social dynamics, and instructional design of the classroom directly affect learners' attentiveness (Rudasill *et al.*, 2018).

Vygotsky, on the other hand, emphasizes the importance of social interactions and scaffolding in promoting cognitive development. Vygotsky's Sociocultural Theory, which highlights the teacher's role as a "more knowledgeable other" supporting children's learning in a structured setting, strengthens this. According to him, learning occurs in the "zone of proximal development" and is enhanced when learners engage in activities led by more experienced people (Vygotsky, 1978).

Together, these frameworks support the notion that experienced educators are better able to improve classroom attentiveness due to their extensive interaction and adaptive expertise.

3. Empirical Review

3.1 ECE Teachers' Knowledge about the Classroom Environment

The classroom setting plays a significant role in shaping behaviour and thought (Bronfenbrenner, 1977). According to Barrett *et al.* (2019), factors that impact children's ability to concentrate and participate include physical space, educational displays, lighting, noise control, and learning centres and classroom layout, lighting, temperature, teacher-learner interactions, and the availability of age-appropriate learning materials have a substantial impact on learners' attentiveness (Adlerstein & Cortazar, 2022; Bergen, 2015).

Early childhood classrooms with natural light, regular routines, and interactive materials improve cognitive engagement and reduce distractibility, according to Adlerstein & Cortazar (2022). Similarly, Gore *et al.* (2016) establish a direct link between early learners' motivation to learn and their capacity to sustain learning.

The physical environment, including the arrangement of learning resources, classroom furniture, movement areas, lighting, and ventilation, and the psychological, social, and instructional aspects of the classroom, are all expected to be thoroughly understood by ECE teachers. Each of these factors influences how comfortable and concentrated learners are. Teachers who are well-versed in this topic intentionally create inclusive, engaging classrooms with spaces for both quiet and active engagement. For instance, the Reggio Emilia approach views the classroom as a "third teacher" and highlights its significance for fostering curiosity and learning (Edwards, 2018).

In addition to the physical aspects of the classroom, teachers must understand how young children are impacted by the emotional and social environment. Learners have a safe space to learn and explore in a classroom that promotes safety, respect, inclusion, and positive relationships between teachers and learners. Teachers who create emotionally supportive environments are better at keeping learners' attention and engagement, especially in early childhood settings where emotional regulation is still developing (Hamre & Pianta, 2019). Moreover, instructional organization and environmental structuring play a major role in classroom management and learning flow. Teachers must know how to use learning centres, thematic areas, and organized routines to promote both independent and cooperative learning.

In addition to the physical aspects of the classroom, teachers must understand how young children are impacted by the emotional and social environment. Learners have a safe space to learn and explore in a classroom that promotes safety, respect, inclusion, and positive relationships between teachers and learners. Teachers who create emotionally supportive environments are better at keeping learners' attention and engagement, especially in early childhood settings where emotional regulation is still developing (Hamre & Pianta, 2019).

To promote independence and reduce distractions, an effective learning environment incorporates visual cues, charts, and clearly marked stations. Particularly for learners with a variety of needs, ECE teachers who apply Universal Design for

Learning (UDL) principles usually create more equitable and engaging classrooms. Learning corners, environmental print, and sensory materials all help create a learning environment that is developmentally appropriate. To meet the cognitive needs of learners at various stages, ECE teachers must be able to adapt the classroom setting. Therefore, rather than merely replicating generic classroom layouts, teachers with expertise in this field adapt their classroom environments based on learners' behavioural reactions and developmental feedback (Yang & Gong, 2025). Maintaining learners' focus and making the most of instructional time requires this reflective and responsive approach (Ritchie, 2021). In situations where teachers lack the necessary knowledge, the opposite may also be true.

3.2 Teachers' Teaching Experience and Their Knowledge and Application of the Classroom Environment

Teachers' years of teaching experience have a significant impact on their proficiency in the classroom, their comprehension of it, and how they use it (i.e., the perception, comprehension, and application of classroom environment principles). Experienced teachers are usually better at managing these factors, using both academic knowledge and practical experience to create supportive learning environments (Bashar & Ahmad, 2018). McClelland *et al.* (2019) found that more experienced ECE teachers are better at modifying classroom elements to accommodate a variety of behavioural needs and learning preferences and foster more fruitful teacher-learner interaction, which promotes attention control and social-emotional development (Hamre & Pianta, 2021). They are also better able to recognize the developmental needs of young children and make well-informed decisions to improve learning outcomes and attentiveness (Adnan *et al.*, 2016). By allowing teachers to adjust their environment in response to developmental cues and needs that are noticed, teaching experience enhances reflective practice. Experienced teachers often develop intuitive teaching strategies and insights into classroom design based on their extensive observations (Podolsky *et al.*, 2019). Over time, they learn to anticipate how learners will act and proactively reorganize the area to reduce distractions and enhance focus. For example, educators with over ten years of experience are frequently more adept at designing adaptable and flexible classroom environments that satisfy learners' academic and socioemotional needs (Gore *et al.*, 2023; McClelland *et al.*, 2019). In resource-constrained areas in rural Ghana, experienced teachers may possibly achieve a balance between learner-centred strategies and limited resources.

It is therefore necessary to comprehend how the teaching experience of ECE teachers affects their comprehension and application of classroom environmental factors in order to evaluate the quality of education offered at the foundational level. However, not every teacher gains from experience in the same way. Some research suggests that if professional development is not continuous, experience could reinforce outdated or inefficient practices. Hargreaves & Fullan (2012) claim that the impact of teaching experience on environmental knowledge is mediated by reflective practice and involvement in learning communities. In settings where they are not exposed to peer

review, workshops, or refresher training, teachers' classroom practices may stagnate despite years of experience. One could contend that years of teaching experience by itself does not ensure effective use of the classroom setting and that younger teachers may be more aware of modern theories and inclusive practices (Hargreaves & Fullan, 2012). For example, early-career ECE teachers who had received training in 21st-century learning models were often more attuned to multicultural classroom considerations, child-centred learning, and digital learning environments (Lin & Magnuson, 2021). These teachers compensate for their possible lack of experience-based judgment by being more adaptable with theory and more open to experimenting with novel teaching strategies and classroom layouts.

3.3 Professional Qualification and ECE Teachers' Knowledge and Application of the Classroom Environment

In as much as teaching experience can enhance one's ability to utilize the classroom environment effectively, its benefits are augmented when paired with continued education and institutional support. Professional mentorship programs, instructional coaching, and collaborative planning sessions help seasoned educators update their practices and apply life lessons to current pedagogical challenges. Therefore, rather than being a direct result of experience, effective use of the classroom environment is shaped by a complex interaction between training, experience, and reflective engagement.

Early childhood teachers' professional backgrounds have a significant impact on how they understand and apply environmental principles in the classroom. Higher-qualified teachers are typically exposed to deeper theoretical underpinnings in child development, environmental psychology, and curriculum design. For instance, formal training in classroom ecology models, child-centred instructional strategies, and developmentally appropriate practices is often provided to individuals with bachelor's and master's degrees (Manning *et al.*, 2017). Such training leads to a more complex and deliberate use of classroom design to improve learning outcomes.

Teachers with a higher degree have a better understanding of inclusive classroom design and constructivist methods and are more likely to use learning centres, thematic displays, and culturally sensitive materials in their classrooms. They also show a better understanding of how classroom space affects children's emotional and cognitive development (Rashid *et al.*, 2025; Dewi *et al.*, 2024).

Additionally, professional qualification is closely linked to the ability to assess and adapt the classroom environment to meet a variety of learning needs. Qualified teachers are more likely to use checklists, observation tools, and student performance data when making environmental decisions (Darling-Hammond *et al.*, 2020). They are also better equipped to support curriculum objectives in the classroom by integrating educational resources like digital learning tools, visual aids, and manipulatives. This dynamic application of knowledge reflects higher levels of pedagogical content knowledge, which are often developed through postsecondary education and practicum experiences (Graham *et al.*, 2020; Darling-Hammond *et al.*, 2020).

Nevertheless, it is important to keep in mind, from the foregoing arguments, that a degree by itself does not guarantee effective implementation in the classroom. Class size, administrative support, and resource availability are examples of contextual factors that can mediate how well qualified teachers apply their knowledge. Even highly qualified teachers may find it challenging to fully implement their environmental ideals in schools with limited resources. Therefore, systemic and institutional enablers are required for a professional degree to be practically effective, even though it provides teachers with the basic knowledge and skills they need (Rashid *et al.*, 2025).

4. Statement of the Problem

A supportive classroom setting helps learners concentrate better (Adlerstein & Cortazar, 2022). Nevertheless, early learners' inattentiveness in the classroom remains a problem despite Ghana's increased investments in teacher training and early childhood infrastructure. Preliminary observation in some of the schools in the Asuogyaman District saw that some learners were fidgety, disengaged, or distracted while lessons were in session because of being crammed into under-stimulating classrooms. Although early learning spaces are emphasized in both national and international policies, their actual implementation appears to be uneven, particularly in rural areas.

The ECE classroom design is crucial to student attentiveness. However, there hasn't been much systematic research on this relationship, and little is known about how ECE teachers' years of experience and professional qualifications impact their awareness and application of such environmental strategies. To the best of the knowledge of the researchers, there appears to be a paucity of empirical research in Ghana that specifically links the teaching experience of ECE teachers to their environmental competency. By examining the relationship between teaching experience and awareness and application of classroom environmental factors, this study aims to close that gap.

Therefore, it is crucial to investigate whether and how teaching experience aids in a teacher's comprehension and application of classroom environmental cues to elicit attentiveness, particularly in high-need, under-resourced areas like rural Ghana. Therefore, the purpose of this study was to investigate whether teaching experience enhances ECE teachers' understanding of classroom environments and how this understanding is used in practical settings to foster learners' attentiveness. The researchers developed three hypotheses to direct the investigation using this background information from the literature.

4.1 Hypotheses

- **H₀₁:** There is no statistically significant difference in the knowledge of the classroom environment among teachers with different years of teaching experience in the Asuogyaman District.

- **H₀₂:** There is no statistically significant difference in the application of classroom environment among teachers with different levels of professional qualification in the Asuogyaman District.
- **H₀₃:** There is no statistically significant influence of teaching experience on the use of the classroom environment to support learners' attention.

5. Methodology

This study employed a quantitative approach guided by a descriptive survey design to gather information about the traits, actions, viewpoints, and attitudes of respondents, from ECE teachers in the Asuogyaman District. The design involved the methodical collection and analysis of data in order to accurately depict teachers' understanding of the classroom environment and their application of the environment for learner attention as it naturally occurred in the ECE classroom, without changing variables. According to Babbie (2021), surveys are one of the most popular social science methods, and this study used them because they have the potential of yielding empirical, generalized data about all the ECE teachers in the study area. The selected design was appropriate for identifying patterns and relationships, allowing the researchers to validate numerical trends and evaluate the state of this educational phenomenon (Creswell, 2014).

The study was triggered by the review of related literature, which suggested that years of teaching experience and educational level are capable of influencing a teacher's ability to utilize the ECE environment to help promote active engagement in the classroom activities. Consequently, a census sampling procedure was adopted to allow all 141 ECE teachers to be included in this study. However, after fulfilling all permission protocols and ethical conditions, 122 respondents agreed and finally took part in the survey. A structured questionnaire was used for data collection.

Data collection for this study was informed through the gap that emerged from the review of the related literature, which suggested that teachers with longer years of teaching experience were better able to identify the classroom environment and appropriately apply it. The researchers formulated a hypothesis with the assumption that there was not going to be any statistically significant difference between teachers' level of education and years of teaching experience, and their knowledge about the classroom environment.

A structured questionnaire was developed and used as the instrument for data collection. The mode of the data collection was face-to-face and online. The determination of either of the approaches was due to the availability and accessibility of the respondent. Where a respondent was available, accessible and comfortable to use the online version, they were allowed, and those who were available, accessible and more comfortable to use the printed copies were also allowed. Respondents were permitted to submit the responses as and when they completed, but within 3 weeks. The data collection was done strictly adhering to all the ethical considerations in the form of informed consent, anonymity, confidentiality and flexible participation.

Descriptive statistics in the form of frequencies and percentages were employed to analyse the professional qualifications and the years of teaching experience of the respondents. Welch ANOVA test, one-way Analysis of Variance (ANOVA), and Kruskal-Wallis H test were the inferential statistical tools used to analyse the hypotheses.

6. Results and Discussion

6.1 Results on Demographic Information

The educational level and the number of years spent teaching at the kindergarten level of the ECE teachers who took part in this study were analyzed. From the data gathered from the questionnaire, the highest level of education among the teachers who participated in the study was a master's degree (3.3%). The majority held a bachelor's degree (68%). Again, respondents had diverse years of teaching experience, spanning from those who recently joined in less than one year (8.2%), up to those who have taught for more than 16 years (14.8%). Those who have taught between 1 and 5 years constituted the majority with 34.4%. The results from the hypotheses are discussed in the subsequent sections.

6.2 Analysis of Hypotheses

H₀₁: There is no statistically significant difference in the knowledge of the classroom environment among teachers with different years of teaching experience in the Asuogyaman District.

The purpose of this hypothesis was to explore whether the number of years that a teacher has been in the classroom had a significant impact on how they perceived the classroom environment in Asuogyaman District early childhood education (ECE) settings. The reasoning behind this was that a teacher's expectations, perceptions, and assessment of the learning environment may be influenced by their prior teaching experience. According to literature, experienced teachers typically have a more sophisticated understanding of what makes a good learning environment (Stronge *et al.*, 2011), and their assessments may be more critical or nuanced than those of inexperienced teachers (Podolsky *et al.*, 2019; Hamre & Pianta, 2021). Therefore, this hypothesis investigated whether teachers' perceptions of the state of their classrooms differed depending on their years of teaching experience.

To be able to assess this, teaching experiences of the teachers were divided into five categories: less than 1 year, 1–5 years, 6–10 years, 11–15 years, and more than 16 years, and they were compared using a one-way Analysis of Variance (ANOVA). The choice of ANOVA was appropriate to ascertain whether there were statistically significant differences between group means. From the results, a significant p-value ($p < 0.05$) would suggest a different perception of the classroom environment than the others. Levene's Test was used to verify the homogeneity of variances assumption prior to the ANOVA, and this is presented in Table 1.

Table 1: Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Knowledge of classroom environment	Based on Mean	2.903	4	117	.025
	Based on Median	2.027	4	117	.095
	Based on Median and with Adjusted df	2.027	4	108.597	.096
	Based on the Trimmed Mean	2.847	4	117	.027

Mixed results are shown in Table 1. The assumption of homogeneity of variances is violated because the p-values based on the mean (.025) and trimmed mean (.027) are less than 0.05. The median-based tests, however, indicate no appreciable infraction. A Welch ANOVA, a reliable substitute for conventional ANOVA that does not assume equal variances, was performed to test for group differences considering the significant mean-based results. Table 2 displays descriptive statistics for the various experience groups.

Table 2: Descriptive Statistics

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Less than a year	10	2.90	.876	.277	2.27	3.53
1-5 years	42	2.93	.677	.104	2.72	3.14
6-10 years	35	2.63	.731	.124	2.38	2.88
11-15 years	17	2.82	.883	.214	2.37	3.28
16 years and above	18	3.06	.539	.127	2.79	3.32
Total	122	2.84	.728	.066	2.71	2.97

Table 2 shows that different experience levels have different mean perceptions of the classroom environment. The lowest mean ($M = 2.63$) was reported by teachers with 6–10 years of experience, while the highest mean ($M = 3.06$) was reported by those with 16 years or more. The standard deviations imply overlapping perceptions, and the differences seem minor despite these variations. With the results shown in Table 3, a Welch ANOVA test was performed to ascertain whether these differences were statistically significant.

Table 3: Welch ANOVA Results

Robust Tests of Equality of Means				
Knowledge of the classroom environment				
	Statistic ^a	df1	df2	Sig.
Welch	1.501	4	37.735	.222
a. Asymptotically F distributed.				

The results of the Welch ANOVA test were $F(4, 37.735) = 1.501, p = .222$. We are unable to reject the null hypothesis because the p-value exceeds the 0.05 threshold. According to their years of experience, teachers' opinions of the classroom environment do not vary in a way that is statistically significant. Games-Howell post-hoc was carried out for

completeness to explore potential pairwise differences. The results are presented in Table 4.

Table 4: Games-Howell Multiple Comparison Results (Excerpt)

Comparison	Mean Diff. (I-J)	Std. Error	Sig.	95% CI (Lower-Upper)
Less than 1 yr vs 6–10 yrs	.271	.303	.894	–.69 – 1.23
6–10 yrs vs 16+ yrs	–.427	.177	.132	–.93 – .08
11–15 yrs vs 1–5 yrs	–.105	.238	.992	–.81 – .60

There were no significant differences between experience groups, as evidenced by the non-significant differences ($p > .05$) found in all pairwise comparisons and the confidence intervals including zero. This reinforced that no meaningful differences existed across experience groups.

The findings indicate that teachers with varying degrees of teaching experience do not perceive a statistically significant difference in the classroom environment, according to the findings of the Welch ANOVA and post-hoc tests. As a result, the null hypothesis is upheld. This result suggests that teachers' awareness of their classroom environment in the Asuogyaman District does not seem to be influenced by their prior teaching experience. The implication is that either teachers, irrespective of their level of experience, encounter comparable infrastructure, or institutional and systemic factors (such as school regulations and policies, resource availability and accessibility, and maintenance practices), and these have a greater influence on classroom environments than individual professional experience (Bashar & Ahmad, 2018; McClelland *et al.*, 2019).

This finding is consistent with earlier research that institutional equity and support frequently have a greater impact on teachers' perceptions of classroom conditions than do individual factors like teaching experience (Bashar & Ahmad, 2018; Podolsky, *et al.*, 2019; Hamre & Pianta, 2021). In this study, the researchers proceeded to explore whether there was a statistically significant difference between teachers of varying years of teaching experience and their application of the classroom environment.

H₀₂: There is no statistically significant influence of teaching experience on the use of the classroom environment to support learners' attention.

This hypothesis investigated whether the number of years that ECE teachers have been in the classroom has a statistically significant influence on how they use the classroom environment to improve learners' attention in the Asuogyaman District. This study is based on the assumption that teachers' pedagogical choices and classroom procedures are greatly influenced by their experience (Bashar & Ahmad, 2018; Hamre & Pianta, 2021). According to Stronge *et al.* (2011), more experienced teachers are typically expected to have a deeper understanding of classroom management, including how to best set up the space for children's engagement and attention.

To test this hypothesis, teachers were divided into five groups according to how long they have been teaching at the KG level: less than 1 year, 1–5 years, 6–10 years, 11–15 years, and 16 years and above. The analysis used non-parametric methods because of

concern about possible violations of normality and homogeneity of variance. In particular, a rank-based substitute for the one-way ANOVA, the Kruskal-Wallis H test, was employed. This test is especially suitable when the assumptions of a normal distribution and equal variances are not satisfied (Field, 2018). Levene's Test for Homogeneity of Variance was performed prior to the Kruskal-Wallis test in order to determine whether the assumption of equal variances had been violated, and the findings are presented in Table 5.

Table 5: Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Use of classroom environment	Based on Mean	7.651	4	117	.000
	Based on Median	4.986	4	117	.001
	Based on Median and with Adjusted df	4.986	4	102.333	.001
	Based on the Trimmed Mean	8.706	4	117	.000

The assumption of homogeneity of variances was violated, as shown in Table 6, where all p-values are less than 0.05. For additional analysis, this infraction supports the use of non-parametric tests like the Kruskal-Wallis test. The Shapiro-Wilk and Kolmogorov-Smirnov tests were used to check for normality in order to confirm the necessity of a non-parametric approach. Table 6 presents the findings.

Table 6: Test of Normality by Years of Teaching in KG

Years of Teaching in KG	Kolmogorov-Smirnov (Sig.)	Shapiro-Wilk (Sig.)
Less than a year	.091	.025
1–5 years	.000	.000
6–10 years	.000	.000
11–15 years	.000	.000
16 years and above	.001	.001

With the exception of the "less than a year" category, all groups violated the normalcy assumption ($p < 0.05$ in both tests), as Table 6 demonstrates. Thus, it was concluded that a non-parametric test was suitable. Table 8 displays the groups' descriptive statistics.

Table 7: Descriptive Statistics

Years of Teaching Experience	N	Mean	Std. Deviation
Less than a year	10	3.20	0.79
1–5 years	42	3.07	0.34
6–10 years	35	3.14	0.49
11–15 years	17	3.12	0.33
16 years and above	18	3.28	0.67
Total	122	-	-

According to Table 7, teachers who had taught for 16 years or above had the highest mean score ($M = 3.28$), indicating a marginally higher use of environmental strategies. While all

group means are fairly close, the lowest was among those aged 1–5 years ($M = 3.07$). This implies that practices are consistent regardless of prior teaching experience. The Kruskal-Wallis H test was used to assess if the mean differences were statistically significant, and the findings are presented in Table 8.

Table 8: Kruskal-Wallis Test Results

Test Statistic	df	Asymptotic Sig.
3.167 (adjusted for ties)	4	.530

The test produced a p-value of .530 and a chi-square statistic of $\chi^2(4, N = 122) = 3.167$. Consequently, we are unable to reject the null hypothesis because this p-value is greater than the significance level of 0.05. According to this finding, there are no statistically significant variations in the ways that teachers employ the classroom environment to boost learners' active engagement based on their years of teaching experience. This implies that, according to the Kruskal-Wallis test results, ECE teachers in the Asuogyaman District do not significantly change how they use the classroom environment irrespective of their years of teaching experience.

This research casts doubt on the notion that more seasoned teachers are inherently better at using environmental strategies to help learners focus. Additionally, it suggests that teachers seem to be employing comparable strategies regardless of their experience level, perhaps as a result of shared school policies, systemic limitations, or standardized training.

This finding bolsters the view of Yang *et al.* (2025), who contend that access to resources, ongoing professional development, and the level of institutional support available to teachers all contribute to effective teaching and not necessarily the number of years of teaching experience. With the findings from hypothesis 2, the researchers proceeded to explore whether professional qualification could bring about a statistically significant difference among teachers in their application of the classroom environment

H03: There is no statistically significant difference in the application of classroom environment among teachers with different levels of professional qualification in the Asuogyaman District.

The hypothesis was purported to find out if the professional backgrounds of teachers in the Asuogyaman District's early childhood education (ECE) settings have an impact on how much they use the classroom environment. This is predicated on the impression that teachers who receive professional training acquire pertinent pedagogical competencies and classroom management techniques (Darling-Hammond, 2000). Higher-credentialed teachers are supposed to demonstrate more knowledge about, and be more likely to implement, effective teaching strategies, such as using the environment to keep learners' attention.

With the rationale that the statistical test was comparing the mean scores of three or more independent groups, in this case, teachers with varying levels of qualification, a

one-way Analysis of Variance (ANOVA) was used to investigate this hypothesis. With this, a p-value less than 0.05 would imply that, at least, one qualifying group uses of environmental strategies differs significantly from the others. To make sure the assumption of equal variances was met, Levene's Test of Homogeneity of Variance was performed prior to the ANOVA. Table 9 presents the findings.

Table 9: Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Use of classroom environment ~ qualifications	Based on Mean	3.767	3	118	.103
	Based on Median	1.727	3	118	.165
	Based on Median and with Adjusted df	1.727	3	110.704	.166
	Based on the Trimmed Mean	4.104	3	118	.120

Given that all significance values in Table 9 are higher than the 0.05 threshold, it appears that the homogeneity of variances assumption was upheld. This demonstrates that the one-way ANOVA was a suitable choice for the analysis. The descriptive statistics for the various qualification groups are shown in Table 10.

Table 10: Descriptive Statistics

Qualification	N	Mean	Std. Deviation
SHS	3	3.00	0.00
Diploma	32	3.19	0.59
Bachelor's Degree	83	3.13	0.46
Master's Degree	4	3.00	0.00
Total	122	3.14	0.49

It is evident from Table 10 that the average scores for each qualification level are rather comparable. There is very little difference between the lowest and highest group means. Significantly, the highest mean usage was reported by those with diplomas ($M = 3.19$), whereas the mean reported by those with SHS and master's degrees was 3.00. These minor variations raise the possibility of practice consistency across qualification levels. A one-way ANOVA test was used to determine whether the observed mean differences were statistically significant. Table 11 displays the results.

Table 11: ANOVA Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.214	3	0.071	0.296	.828
Within Groups	28.417	118	0.241		
Total	28.631	121			

According to the ANOVA results, there is no statistically significant difference in how teachers with varying professional backgrounds use the classroom environment ($F(3, 118) = 0.296, p = .828$). Any differences in the group means are not statistically significant, as indicated by the p-value, which is significantly higher than 0.05.

The data showed that the null hypothesis is not disproved. This implies that teachers' use of the classroom environment is not greatly impacted by their professional credentials (being SHS, diplomas, bachelor's degrees, or master's degrees).

This result calls into question some of the presumptions made in the literature on teacher education that improved classroom practices are a direct result of higher qualifications. Rather, it might be a reflection of other contextual or systemic factors, such as uniformity in pre-service training, restricted access to resources, or the uniformity of teaching methods across educational levels. The outcome might also imply that teachers in the Asuogyaman District, irrespective of their qualifications, have either received sufficient training in environmental strategies or are subject to the same institutional restrictions that restrict differentiated practices.

7. Discussion of Results

7.1 Teachers' General Knowledge of Classroom Environment

The study was purported to ascertain the knowledge ECE teachers possess about the classroom environment, whether or not teaching experience affects this knowledge and how it is applied. The results of the study indicate that early childhood teachers in the Asuogyaman District are more knowledgeable about how to encourage children's attention in the classroom. When the results reveal several patterns that help explain the benefits and drawbacks of teachers' environmental practices.

According to the study, teachers with varying degrees of experience generally demonstrated moderate to high awareness of the classroom environment and the elements that motivate learners to pay attention. Classroom design, lighting, ventilation, learning areas, educational resources, and teacher-learner interaction are some of the components. This pattern shows a basic understanding that is consistent with a larger body of early childhood literature that emphasize the significance of these environmental elements for children's focus and learning. Barrett *et al.* (2019), Hamre and Pianta (2019), and Gore *et al.* (2016) claim that well-organized, developmentally appropriate, and emotionally supportive classrooms boost learners' engagement. The results corroborate Bronfenbrenner's assertion that children's immediate physical and social environments (microsystems) have a significant impact on their behaviour and engagement, as well as Vygotsky's theory that scaffolded learning requires structured environments (Vygotsky, 1978; Bronfenbrenner, 1977).

When the study examined whether teaching experience resulted in notable variations in teachers' comprehension of these environmental principles, the results did not support this assumption. Surprisingly, despite the literature's claim that more experienced teachers typically develop a deeper intuitive understanding of the classroom ecology (McClelland *et al.*, 2019), the study's results did not show statistically significant differences in knowledge. Although these differences were not statistically significant, teachers with 16 or more years of experience had slightly higher average knowledge scores than teachers with mid-level experience. This suggests that teaching experience

alone does not always shape teachers' perceptions and understandings of their classroom environments in the Asuogyaman District.

Regardless of experience level, the results suggest that the teachers have similar exposure, training, and classroom environment constraints. In these circumstances, structural realities may have a greater impact on their perceptions than their own professional backgrounds. This observation supports the assertion that institutional constraints, such as uniform infrastructure, district-level policies, and resource limitations, often have a greater impact on teachers' environmental awareness than personal characteristics (Yang & Gong, 2025; Strong, 2011).

Barrett *et al.* (2019), Hamre & Pianta (2021), and Ritchie *et al.* (2021) have all identified well-organized learning spaces, adequate light and ventilation, space for movement, and emotional warmth as critical for attentiveness. Based on empirical research, the teachers demonstrated their understanding of these factors. Arguably, the teachers were endowed with basic knowledge, but the application of this knowledge was mediated by systemic constraints.

7.2 Influence of Teaching Experience on Classroom Environment Application

A similar pattern was observed when it came to how teachers use the classroom environment to attract learners' attention. The study found no statistically significant impact of teaching experience on teachers' use of the classroom environment to support learners' attention, in contrast to long-standing assumptions in educational research that suggest experienced teachers are more skilled at classroom organization, behavior management, and environmental structuring (Bashar & Ahmad, 2018; McClelland *et al.*, 2019; Podolsky, *et al.*, 2019; Hamre & Pianta, 2021). Teachers with more than 16 years of experience had a slightly higher mean usage, while those with 1–5 years had the lowest, though these differences were not statistically significant.

This finding could lead to important conclusions and suggestions. First, personal experience is not as important as contextual factors. The infrastructure, class sizes, and resource limitations appeared to be similar for the teachers. This is consistent with a study by Yang *et al.* (2025) that found effective teaching is shaped by systemic support and not experience alone. Once more, professional stagnation may occur in the absence of ongoing improvement. This is due to the fact that, as Hargreaves & Fullan (2012) note, experience only enhances practice when teachers continuously learn, reflect, and update their skills.

7.3 Influence of Professional Qualification on Application of Classroom Environment

This study also demonstrated that teachers' professional credentials had no discernible effect on how they applied classroom environmental principles. Despite the empirical literature's suggestion that teachers with higher qualifications are typically exposed to stronger theoretical and practical foundations in classroom design and management, the results showed that teachers with diplomas, bachelor's degrees, and master's degrees displayed largely similar classroom practices (Darling-Hammond *et al.*, 2020).

Diploma holders had the highest application mean scores, while SHS and master's holders had the lowest, though none of these differences were statistically significant. The lowest mean score among SHS graduates and master's degree holders calls for concern that qualifications alone might not be sufficient to drastically change classroom practices, and the following factors could be the cause of this non-significant relationship. The quality of the classroom environment and the frequency with which it is used to support children's attentiveness are influenced by systemic and contextual limitations rather than teacher-level factors like experience or training. Thus, the reality is that in resource-poor contexts, qualification differences alone do not result in different classroom practices (Rashid *et al.*, 2025). In a sense, the teachers were aware of what constitutes a productive environment, but they were often unable to implement these concepts due to structural limitations.

As it is appreciated that there may be structural and resource constraints, teachers with higher qualifications are expected to be able to create their own teaching resources using local materials, plan and set up their classrooms to fit the learning environment which supports children's attentiveness. Additionally, they should be able to overcome the obstacle by adapting to local realities, where theoretical differences learned in higher education overshadow practical challenges. It will be intriguing to investigate potential explanations for this study's results in future research.

8. Conclusion

Although teachers demonstrated an awareness of basic environmental principles, their professional qualifications and teaching experience did not significantly differentiate their knowledge and practice. The uniformity in practices appears to be the consequence of shared infrastructure realities, uniform training pathways, and district-level constraints rather than variations at the teacher level. It follows that systemic changes, rather than relying solely on teacher experience, are necessary to improve ECE learning environments in the Asuogyaman District of Ghana. Therefore, the study concludes that improving academic qualifications or teacher experience alone will not be enough to raise the standard of the classroom environment in early childhood settings. Therefore, focused infrastructure investments, organized professional development, and encouraging supervision are necessary to improve classroom environments and learners' attentiveness. Regardless of their background or qualification, teachers' ability to use the classroom setting to increase attentiveness is limited in the absence of these institutional enablers.

9. Recommendations

From the findings and the conclusion, the following useful suggestions are proposed:

- 1) The Ministry of Education and the district assembly should give ECE infrastructure investment childhood a top priority by repairing deteriorating

structures, improving ventilation, providing age-appropriate furniture, and reorganizing the classroom to create space for learning centres.

- 2) The District Education Directorate should set up a continuous professional development program with an emphasis on classroom design and behavioural engagement. Teachers should include peer learning opportunities, demonstration lessons, and model classrooms to ensure they can put the skills they learn in these workshops into practice right away.
- 3) Teachers should be assisted by their headteachers and circuit supervisors in the planning of monthly "improvisation workshops" where teachers will lead or co-lead the development of low-cost educational materials from locally available materials like cardboard, fabric scraps, bottle tops, or wood offcuts.
- 4) Teachers themselves should adopt reflective practices to improve their environmental strategies. If teachers kept weekly reflections on how routines, materials, or space affected their children's attentiveness, they would be able to identify trends and refine their methods.
- 5) Collaborative planning within circuits, peer observation, and participation in professional learning communities would all enhance the sharing of practical strategies, particularly when resources are scarce.

Creative Commons License Statement

This research work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0>. To view the complete legal code, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode.en>. Under the terms of this license, members of the community may copy, distribute, and transmit the article, provided that proper, prominent, and unambiguous attribution is given to the authors, and the material is not used for commercial purposes or modified in any way. Reuse is only allowed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

Conflict of Interest Statement

The authors of this article declare no conflict of interest.

About the Authors

Samuel Oppong Frimpong is an experienced university teacher with close to two decades of teaching experience at a higher institution. He has research interests in quality early childhood education (including teacher quality, assessment, pedagogy, environment, and the use of TLMS), child safety and wellbeing, curriculum implementation, and play-based learning. Samuel holds a Doctor of Philosophy (in Early Childhood Education) from the University of Aberdeen in Scotland, UK, a Master of Philosophy (Educational Psychology) and a Bachelor of Education (Educational

Psychology) from the University of Cape Coast, Ghana. He has numerous published articles and books to his credit.

Rebecca, Tetteh is a beginning researcher with a particular research interest in classroom environment and learner attentiveness. She is a professionally trained early childhood educator. Rebecca holds a Master of Philosophy in Early Childhood Education from the University of Education, Winneba, Ghana. She is currently a program head at the Child and Family Welfare Department of the Social Welfare, Ghana.

Justina Adu is a Senior Lecturer at the Department of Early Childhood Education of the University of Education, Winneba, Ghana. She had her first Degree at the University of Education, Winneba, where she offered Arts Education. She also obtained her Master of Philosophy Degree in Basic Education from the University of Cape Coast, Ghana, and a terminal degree from the University of South Africa. She has published several research papers on emergent writing activities, material development, and instructional materials development. Her research interests are in Early Childhood Art, Language and Literacy and Learner Attentiveness.

Esther Safowaa is a dedicated early childhood educator with extensive experience in developing and implementing early childhood programmes in the areas of instructional delivery, learning resources development, and classroom management. She loves to research more into early childhood education, specifically in curriculum implementation and parental involvement in early childhood education. Esther is currently the Early Childhood Coordinator for Atwima Kwanwoma Municipal and works closely with teachers, parents, and other stakeholders to promote quality early childhood education. She holds a Master of Philosophy in Early Childhood Education from the University of Education, Winneba, Ghana.

References

- Adlerstein, S., & Cortazar, M. (2022). Classroom environment and child development: Global perspectives. *International Journal of Early Childhood*, 54(2), 145–160.
- Adnan, A., Dilshad, M., & Khan, M. Y. (2016). Effectiveness of Early Childhood Education Program in the Government Schools of Punjab: A Situational Analysis. *Development*, 6(17), 40-46. Retrieved from <https://iiste.org/Journals/index.php/RHSS/article/view/32822>
- Babbie, E. (2021). *The practice of social research* (15th ed.). Cengage AU. Retrieved from https://books.google.ro/books/about/The Practice of Social Research.html?id=KrGeygEACAAJ&redir_esc=y
- Barrett, P., Davies, F., Zhang, Y., & Barrett, L. (2019). The impact of classroom design on pupils' learning: Final results of a holistic, multi-level analysis. *Building and Environment*, 89, 118–133. Retrieved from <https://doi.org/10.1016/j.buildenv.2015.02.013>

- Bashar, M., & Ahmad, R. (2018). Teacher-learner interaction and learner attentiveness in early childhood education. *Journal of Teaching and Education*, 7(2), 27–38.
- Bergen, D. (2015). The Role of the Physical Environment in Fostering Creativity. *Early Childhood Education Journal*, 43(3), 155-158.
- Blair, C., & Raver, C. C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual Review of Psychology*, 66, 711–731. <https://doi.org/10.1146/annurev-psych-010814-015221>
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32(7), 513–531. <https://psycnet.apa.org/doi/10.1037/0003-066X.32.7.513>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications. Retrieved from https://books.google.ro/books/about/Research_Design.html?id=4uB76IC_pOQC&redir_esc=y
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Diamond, A., & Ling, D. S. (2020). Executive functions and early learning. *Current Directions in Psychological Science*, 29(2), 118–125. <https://doi.org/10.1093/oso/9780199974467.003.0008>
- Dewi, A. E. R., Kalil, N. C., Hidayat, H., & Juniati, S. R. (2024). Exploring the Relationship between Teacher Professional Development and Student Learning Outcomes. *Journal of Pedagogy*, 1(5), 109–116. <https://doi.org/10.62872/a5xyk576>
- Edwards, C. (2018). *The hundred languages of children: The Reggio Emilia experience in transformation* (3rd ed.). Praeger. Retrieved from <https://eric.ed.gov/?id=ED531297>
- Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). Sage. Retrieved from https://books.google.ro/books/about/Discovering_Statistics_Using_IBM_SPSS_St.html?id=Nf3TEAAQBAJ&redir_esc=y
- Graham, L. J., White, S. L., Cologon, K., & Pianta, R. C. (2020). Do teachers' years of experience make a difference in the quality of teaching? *Teaching & Teacher Education*, 96. <https://doi.org/10.1016/j.tate.2020.103190>
- Gore, J. M., Lloyd, A., Smith, M., Bowe, J., Ellis, H., & Lubans, D. R. (2016). Classroom environment and learner engagement. *Teaching and Teacher Education*, 55(3), 13–25.
- Hamre, B. K., & Pianta, R. C. (2019). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development*, 76(5), 949–967. <https://doi.org/10.1111/j.1467-8624.2005.00889.x>
- Hamre, B. K., & Pianta, R. C. (2021). Effective teacher–child interactions: The classroom assessment scoring system. *Early Childhood Research Quarterly*, 54(3), 215–230.
- Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. Teachers College Press.

- Lin, Y. C., & Magnuson, K. A. (2021). Classroom quality and children's academic skills in childcare centres: Understanding the role of teacher qualifications. *Early Childhood Research Quarterly*, 42, 215–227. <https://doi.org/10.1016/j.ecresq.2017.10.003>
- Manning, M., Gaertner, S., Johnson, S., & Rimfeld, K. (2017). Effects of early childhood education and care teacher qualifications on quality and child outcomes: A meta-analysis. *Campbell Systematic Reviews*, 13(1), 1–82.
- McClelland, M. M., Cameron, C. E., Connor, C. M., Farris, C. L., Jewkes, A. M., & Morrison, F. J. (2019). Links Between Behavioural Regulation and Preschoolers' Literacy, Vocabulary, and Math Skills. *Developmental Psychology*, 55(10), 2216–2230. <https://doi.org/10.1037/0012-1649.43.4.947>
- Nawaz, A., Ashraf, I., & Siddique, A. (2021). Impact of Effectiveness of Early Childhood Education on Students' Learning Outcomes in Pakistan. *Interdisciplinary Journal of Educational Research*, 3(2): 71–78. <https://doi.org/10.51986/ijer-2021.vol3.02.04>
- Oppong Frimpong, S. (2019). The classroom environment as the “third teacher”: Implications for early childhood education in Ghana. *Journal of Education and Practice*, 10(18), 43–52.
- Podolsky, A., Kini, T., & Darling-Hammond, L. (2019). Does teaching experience increase teacher effectiveness? A review of US research. *Journal of Professional Capital & Community*, 4(4), 286–308. <https://doi.org/10.1108/IPCC-12-2018-0032>
- Rashid, S.I.B.A., Singh, G.K., & Singh, R.K.P.G. (2025). The Impact of Professional Development on Early Childhood Education Teachers. *International Journal of Academic Research in Progressive Education and Development*, 14(2), (2025), 1493 – 1512. Retrieved from <https://ijarped.com/index.php/journal/article/view/3601>
- Ritchie, J. (2021). Ethnography in early childhood education. In A. R. Paar (Ed.), *The SAGE handbook of early childhood policy*. <https://doi.org/10.1093/acrefore/9780190264093.013.532>
- Rudasill, K. M., Snyder, K. E., Levinson, H., & Adelson, J. L. (2018). Systems view of school climate: A theoretical framework for research. *Educational Psychology Review*, 30(1), 35–60. <https://doi.org/10.1007/s10648-017-9401-y>
- Stronge, J. H., Ward, T. J., & Grant, L. W. (2011). What makes good teachers good? A cross-case analysis of the connection between teacher effectiveness and student achievement. *Journal of Teacher Education*, 62(4), 339–355. <https://doi.org/10.1177/0022487111404241>
- UNESCO. (2021). *Understanding the importance of early childhood education*. Paris: UNESCO Press.
- Vandenbroeck, M., Van Laere, K., & Van Houtte, M. (2018). Would it really matter? The democratic and caring deficit in “parental involvement.” *European Early Childhood Education Research Journal*, 26(2), 187–200. <https://doi.org/10.1080/1350293X.2018.1441999>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press. <https://doi.org/10.2307/j.ctvjf9vz4>

- Yang, H., & Gong, J. J. (2025). Years in the Classroom: Association Between Teaching Experience and Teacher Competence in Early Childhood Education in Japan and South Korea. *Early Education and Development*, 36(5), 1046–1065. <https://doi.org/10.1080/10409289.2025.2484851>
- Yang, R., Magnuson, K., & Duncan, G. J. (2025). Does early childhood teachers' experience matter for children's learning? A systematic review and meta-analysis. *Educational Research Review*, 35, 100501.