

STUDY SPACES AND ACADEMIC PERFORMANCE OF BACHELOR OF PHYSICAL EDUCATION STUDENTS: BASIS FOR ENHANCING LEARNING ENVIRONMENTS

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ABSTRACT: This study examined the relationship between the perceived quality of study spaces and the academic performance of Bachelor of Physical Education (BPED) students at Negros Oriental State University. Specifically, it investigated students' perceptions of three learning environment domains: physical study spaces (libraries and classrooms), digital or virtual study spaces (Google Classroom), and physical or specialized learning spaces (gymnasiums, sports fields, laboratories, and studios), and their corresponding Grade Point Averages (GPA). Using a quantitative correlational research design, data were gathered from 94 BPED students through a researcher-developed, validated, and reliability-tested questionnaire. Descriptive statistics were employed to determine the students' level of academic performance and perceptions, while Spearman Rho was used to assess the relationship between study spaces and GPA. Findings revealed that most students achieved Very Good academic performance, with study spaces generally rated as conducive to learning. Physical and digital environments were perceived as comfortable, accessible, and motivating, while specialized learning facilities were viewed as supportive of skill development. However, the results showed no significant correlation between the perceived quality of study spaces and students' academic performance, indicating that while learning environments contribute to engagement and motivation, they do not directly predict academic outcomes. The study concludes that learning spaces serve as essential enablers of effective teaching and learning but must be complemented by quality instruction, student motivation, and institutional support. It recommends that higher education institutions enhance infrastructure, integrate flexible and inclusive design principles, and promote pedagogical practices that maximize both physical and digital environments for holistic student development.

Keywords: study spaces, learning environments, academic performance, BPED students, physical education, digital learning.

1. INTRODUCTION

The quality of the learning environment plays a pivotal role in shaping students' academic success, motivation, and overall well-being. In higher education, study spaces, comprising physical, digital, and specialized learning environments, serve not only as functional areas for academic activities but also as catalysts that influence concentration, engagement, and performance [1]. Research in environmental psychology and neuroarchitecture underscores that environmental attributes such as lighting, acoustics, spatial layout, and color can significantly affect cognitive processes, particularly attention and memory, thereby influencing learning outcomes [2; 1].

Within physical education (PE) programs, the role of the learning environment assumes a more dynamic dimension. Effective physical learning spaces such as gymnasiums, laboratories, and outdoor facilities facilitate experiential, kinesthetic, and collaborative forms of learning that are vital to professional preparation in the discipline [3]. The availability, accessibility, and functionality of such facilities have been directly linked to students' academic achievement and learning efficiency [4; 5]. Moreover, learning environments influence not only the cognitive domain but also students' affective engagement and sense of belonging, both of which are integral to the holistic formation of future educators [6].

In recent years, higher education institutions have increasingly recognized that learning spaces are not neutral backdrops but active agents that shape pedagogical practice and learner interaction. Studies have shown that innovative and well-designed physical learning environments (PLEs) enhance collaboration, creativity, and motivation when

aligned with psychosocial and pedagogical frameworks [7]. Similarly, digital learning platforms such as Google Classroom have become integral extensions of physical spaces, supporting flexible and accessible learning experiences that complement face-to-face instruction. The interplay between physical and virtual environments forms a critical aspect of modern educational ecosystems, influencing students' academic trajectories and performance [8].

In the Philippine context, the emphasis on learner-centered and competency-based education heightens the need to examine how study spaces affect the academic performance of tertiary students, particularly those enrolled in teacher education programs such as the Bachelor of Physical Education (BPED). Previous studies conducted locally indicate that a conducive learning environment enhances both intrinsic and extrinsic motivation, while environmental limitations may hinder engagement and academic success [9; 10]. The integration of physical, digital, and specialized learning spaces into pedagogical design, therefore, becomes crucial for sustaining quality outcomes in teacher training institutions.

Despite global and national initiatives promoting improved educational infrastructure, there remains a paucity of empirical studies focusing on how specific types of study spaces such as physical (libraries and classrooms), digital (Google Classroom), and specialized (gymnasiums, sports fields, laboratories, and studios) collectively influence academic achievement among BPED students. Addressing this gap is essential, given that the physical education discipline requires varied spatial contexts that bridge theoretical learning and practical application [11; 12].

Hence, this study aims to examine the relationship between study spaces and the academic performance of BPED students at the tertiary level, as measured by their Grade Point Average (GPA). By identifying students' perceptions of their study environments and determining their correlation with academic achievement, this research seeks to provide evidence-based insights for the enhancement of learning spaces.

Specifically, it purports to shed light to the following questions:

1. What is the level of academic performance (GPA) of BPED students?
2. What is the perceived quality of study spaces and learning environments of BPED students in terms of:
 - 2.1. Physical study spaces (library and classrooms);
 - 2.2. Digital/virtual study spaces (Google Classroom); and
 - 2.3. Physical/specialized learning spaces (gymnasiums, sports fields and courts, laboratories, and studios)?
3. Is there a significant relationship between the perceived quality of study spaces and the academic performance of BPED students?

2. REVIEW OF RELATED LITERATURE

Learning Environments and Academic Performance

The learning environment is widely recognized as a determinant of student achievement and engagement across educational settings. A growing body of research highlights how environmental quality, spatial design, and resource adequacy directly affect students' cognitive performance, motivation, and sense of belonging. According to Ramli and Zain [4], facilities such as classrooms, libraries, and sports amenities significantly influence students' academic achievement, demonstrating that adequate infrastructure enhances both teaching and learning processes. Similarly, Baafi [5] emphasized that pleasant and well-maintained physical environments contribute to improved academic outcomes and foster a positive educational climate.

Neuroarchitectural perspectives provide additional insights into how built environments shape human cognition. Llorens-Gámez et al. [1] synthesized empirical evidence showing that architectural features, including lighting, spatial layout, color, and sound, affect memory and attention. Their review underscored that such factors can objectively enhance or hinder concentration, which in turn influences learning efficiency. Complementing this, Makaremi et al. [2] revealed through a systematic review that the physical classroom environment affects students' well-being, comfort, and social interactions, suggesting a need for holistic and regenerative design approaches in higher education spaces.

Physical Learning Spaces in Higher Education

Physical learning environments in tertiary institutions are not merely passive settings but active agents that shape teaching and learning dynamics. Leijon et al. [8] observed through their systematic review that physical learning spaces have received increasing scholarly attention for their role in supporting innovative pedagogies. However, they also noted that research remains fragmented and under-theorized, calling for a more integrated understanding of space and learning. Baars et al. [7] contributed to this discourse by analyzing how physical learning environments (PLEs) interact with

psychosocial factors. Their findings indicated that the effectiveness of such spaces depends on the alignment of spatial design with pedagogical and institutional systems.

At a more experiential level, LeGrow et al. [6] explored how students perceive and inhabit new learning environments. Their qualitative study found that the design of modern academic buildings shapes students' sense of place, identity, and professional collaboration. Likewise, Coelho et al. [11] developed the "Survey on Student School Spaces" (S3S) as an inclusive tool that incorporates students' feedback into school design. Their participatory approach affirmed that involving learners in spatial planning enhances inclusivity and ownership, which are critical to academic success.

In the context of physical education, specialized learning environments such as gymnasiums, laboratories, and sports fields play a distinctive role in facilitating applied and embodied learning. Rohmansyah and Hiruntrakul [3] confirmed that effective classroom management and appropriate spatial arrangements in physical education classes contribute significantly to a positive learning atmosphere. Their findings imply that maintaining well-structured physical environments enhances teaching effectiveness and student discipline.

Digital and Hybrid Study Spaces

The digital transformation of education has expanded the concept of study spaces beyond physical boundaries. Digital and virtual learning environments now complement traditional classrooms by providing flexibility, accessibility, and interactivity. Walker and Baepler [13] developed and validated the Social Context and Learning Environments (SCALE) Survey, which measures social relations in various classroom types, including technology-enhanced spaces. Their work highlighted that both formal and informal social interactions are essential components of effective learning environments.

In hybrid settings, digital tools such as Google Classroom support continuous engagement between students and instructors. Leijon et al. [8] emphasized that higher education institutions must integrate physical and digital spaces to reflect contemporary pedagogical practices. Nja et al. [12] further demonstrated that learning spaces affect students' collaboration, motivation, and academic outcomes, mediated by physical, psychological, and social factors. Their study recommended optimizing seating arrangements and acoustics to promote student interaction and concentration, principles that also extend to virtual learning platforms.

Learning Environments, Motivation, and Well-Being in Physical Education

Learning spaces influence not only academic performance but also motivation and well-being, particularly in physical education contexts. Margario, Solidarios, and Bual [9] found that the availability of learning facilities in physical education, such as exercise and dance areas, correlates positively with students' intrinsic and extrinsic motivation. Their research underscored that favorable learning conditions enhance engagement and instructional quality. Similarly, Aclan and Osorno [10] revealed that a supportive learning environment contributes to physical education teachers'

perceived well-being, demonstrating that spatial and attitudinal factors jointly affect professional satisfaction.

From a broader perspective, LeGrow *et al.* [6] and Makaremi *et al.* [2] both observed that learning spaces can promote or constrain students' mental health and emotional connectedness. The physical and psychological comfort derived from well-designed spaces strengthens learners' motivation and retention. Baars *et al.* [7] likewise argued that innovative physical environments must be attuned to psychosocial needs to sustain motivation and reduce resistance to pedagogical change.

Inclusive and Contextual Dimensions of Learning Spaces

Inclusive and participatory design has become a cornerstone of modern educational architecture. Coelho *et al.* [11] emphasized that students' direct involvement in assessing and redesigning school spaces ensures that educational environments are responsive to diverse learning needs. Such approaches resonate with Llorens-Gómez *et al.* [1], who advocated for methodological rigor and interdisciplinary collaboration in exploring how spatial design enhances human cognition.

In the context of physical education, inclusivity extends to ensuring that all students have access to safe, well-equipped, and supportive facilities. Baafi [5] and Ramli and Zain [4] both identified infrastructure adequacy as a critical determinant of student performance, particularly in environments where space limitations constrain practice-based learning. Aclan and Osorno [10] added that teachers' attitudes toward their work environment also mediate the effectiveness of these spaces.

3. SIGNIFICANCE OF THE STUDY

The findings of this study are expected to contribute to the growing body of knowledge on how study spaces shape academic achievement, motivation, and learning engagement in higher education. Specifically, it provides empirical evidence on the relationship between the perceived quality of physical, digital, and specialized learning environments and the academic performance of Bachelor of Physical Education (BPED) students. As such, the study holds practical and theoretical significance for several key stakeholders.

For Students

The study offers BPED students a deeper understanding of how their learning environments influence concentration, collaboration, and academic outcomes. By recognizing the importance of conducive physical spaces such as classrooms, gymnasiums, and laboratories, as well as digital spaces such as Google Classroom, students can adopt more effective study habits and learning strategies. This awareness promotes autonomy, self-regulation, and motivation in their pursuit of academic success.

For Teachers and Faculty

For instructors and faculty members, the results provide valuable insights into how teaching effectiveness can be enhanced through optimal use of learning environments. Understanding the connection between classroom design, student interaction, and engagement can help educators implement pedagogical approaches that maximize spatial and technological resources.

For School Administrators and Policy Makers

The study underscores the need for educational institutions to prioritize the development and maintenance of well-designed, inclusive, and functional learning environments. Findings may guide school administrators and facilities planners in allocating resources for infrastructure improvement, classroom redesign, and the integration of digital learning systems.

For Curriculum Developers and Program Coordinators

Curriculum planners and program coordinators in teacher education institutions, particularly in physical education, may use the study's findings to align learning outcomes with environmental design.

For Future Researchers

This study also contributes to academic discourse by filling a contextual and disciplinary gap in existing literature. While many studies have examined learning environments in general education, few have explored their implications in physical education programs within the Philippine setting. Future researchers may build upon this study by conducting longitudinal or experimental investigations, developing localized instruments for assessing study spaces, or extending the inquiry to other teacher-education specializations.

4. METHODOLOGY

Research Design

This study utilized a quantitative correlational research design to determine the relationship between the perceived quality of study spaces and the academic performance of Bachelor of Physical Education (BPED) students. The correlational design was appropriate because it allowed the researcher to identify the strength and direction of relationships between variables without manipulating them. The investigation aimed to determine whether students' perceptions of their learning environments, including physical, digital, and specialized spaces, have a significant relationship with their academic achievement as measured by their Grade Point Average (GPA).

Research Locale

The study was conducted at Negros Oriental State University (NORSU), specifically within the College of Teacher Education, where the BPED program is offered. The university provides a variety of learning spaces such as classrooms, libraries, computer laboratories, gymnasiums, and outdoor sports facilities. These environments were considered appropriate for the study since they represent both physical and specialized learning areas that support the academic and practical training of BPED students.

Respondents of the Study

The respondents consisted of 94 Bachelor of Physical Education students officially enrolled from the 2nd year to 4th year levels during the Academic Year 2024–2025. First-year students were excluded since they had limited exposure to specialized and digital learning spaces relevant to the program.

A stratified random sampling technique was used to ensure proportional representation across the three year levels. The inclusion criteria specified that participants must be officially enrolled in the BPED program, have completed at least one semester of coursework involving both physical and digital

learning environments, and voluntarily agree to participate in the study.

Research Instrument

The main data-gathering tool was a structured questionnaire developed by the researcher. The instrument was designed based on literature, frameworks, and validated tools from prior studies on learning spaces and student performance. It consisted of two major parts:

Part I – Academic Performance

This section gathered the respondents' Grade Point Average (GPA) from the most recent semester. The GPA served as the quantitative measure of academic performance.

Part II – Perceived Quality of Study Spaces

This section assessed the respondents' perceptions of the quality of their study environments. It consisted of statements rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), covering three domains:

Physical study spaces such as libraries and classrooms, Digital or virtual study spaces including Google Classroom and online learning tools, Specialized physical learning spaces such as gymnasiums, sports fields, laboratories, and multipurpose halls.

RESULTS AND DISCUSSION

Table 1.1 Respondents GPA

Grade	GPA	
	f	%
95 & above Excellent (E)	1	1.06
92-94 Very Good (VG)	43	45.74
90-91 Good (G)	28	29.79
88-89 Very Satisfactory (VS)	14	14.89
85-87 Satisfactory (S)	8	8.51
Total	94	100

Legend:

- 95 & above Excellent (E)
- 92-94 Very Good (VG)
- 90-91 Good (G)
- 88-89 Very Satisfactory (VS)
- 85-87 Satisfactory (S)
- 83-84 Fairly Satisfactory (FS)

Table 1.1 shows that most BPED students fall under the Very Good (VG) category, comprising 45.74% of the respondents. This indicates that the majority of the students obtained GPAs ranging from 92 to 94, reflecting commendable academic performance. Meanwhile, 29.79% achieved a Good (G) rating (90–91), while 14.89% were classified as Very Satisfactory (VS) (88–89). A smaller portion of 8.51% were in the Satisfactory (S) range (85–87), and only 1.06% attained an Excellent (E) standing (95 and above).

The distribution suggests that most BPED students maintain consistent and above-average academic performance. According to Llorens-Gómez *et al.* [1] and Coelho *et al.* [11], conducive study environments and well-designed learning spaces contribute to sustained focus and engagement, which may explain the predominance of high GPA levels among the respondents. However, as Ramli and Zain [4] emphasized, facility quality alone does not determine academic success, implying that intrinsic motivation and instructional quality also play critical roles in achieving excellent performance.

Table 2.1 presents the perceived quality of study spaces and learning environments of BPED students in terms of physical study spaces, which include libraries and classrooms. The composite mean of 3.96 (Agree) suggests that students generally view their study environments as supportive of academic engagement and learning.

Table 2.1 Perceived Quality of Study Spaces and Learning Environments of BPED Students in Terms of Physical Study Spaces (Library and Classrooms)

Study Spaces (Library and Classrooms)	Mean	SD	Interpretation
The seating in the library/classroom is comfortable for extended study sessions.	4.13	0.88	Agree
Tables and chairs are arranged in a way that supports both individual and group study.	4.28	0.88	Agree
There is adequate space for movement and accessibility.	4.01	1.00	Agree
The classroom/library layout helps minimize distractions during study.	4.00	0.99	Agree
The study spaces have adequate natural lighting for reading and writing.	4.19	0.88	Agree
Artificial lighting is bright enough for concentrated work.	4.05	0.94	Agree
The overall design and color scheme create a calm learning environment.	4.06	0.94	Agree
The study space feels inviting and conducive to learning.	4.06	0.88	Agree
The study space is generally free from disruptive noise.	3.82	1.03	Agree
Quiet areas are available when focused study is needed.	4.06	1.02	Agree
Group activities or discussions do not interfere with individual study.	3.70	1.07	Agree
Electrical outlets are accessible and sufficient for charging devices.	3.80	1.07	Agree
Internet/WiFi connection in the library/classroom is strong and reliable.	3.26	1.38	Neutral
The space provides adequate access to learning materials (books, projector, etc.).	3.95	0.93	Agree
The physical environment supports the effective use of technology for learning.	3.98	0.93	Agree
Composite Mean	3.96		Agree

The highest-rated indicators were those related to lighting and comfort, such as adequate natural lighting ($\bar{x}=4.19$) and comfortable seating arrangements ($\bar{x}=4.13$). These results indicate that illumination and ergonomic factors significantly contribute to students' attentiveness and sustained focus. This

finding aligns with Llorens-Gómez et al. [1], who emphasized that well-designed spatial and lighting conditions enhance attention and memory from a neuroarchitectural perspective. Likewise, LeGrow *et al.* [6] observed that comfort, spatial identity, and the physical layout of study areas foster a sense of belonging and improve students' engagement in academic tasks.

Meanwhile, indicators such as noise control ($\bar{x} = 3.82$) and group activity management ($\bar{x} = 3.70$) received relatively lower means, implying moderate issues with maintaining focused study environments during collaborative or interactive sessions. This observation supports the findings of Walker and Baeppler [13], who stated that spatial configurations influence social interaction and learning dynamics; spaces lacking clear boundaries between individual and collaborative zones may lead to distractions. Similarly, Coelho et al. [11] pointed out that inclusive design principles must consider acoustic control and zoning to ensure both group and individual learning needs are met.

Furthermore, the indicator on Internet or WiFi connectivity obtained the lowest mean ($\bar{x} = 3.26$), interpreted as Neutral, signifying inconsistency in digital access across study areas. Ramli and Zain [4] highlighted that accessibility to technological infrastructure such as reliable connectivity and electrical power plays a crucial role in students' academic performance, emphasizing that physical and digital facility integration must be prioritized in higher education environments.

Overall, the results show that students perceive their physical study spaces as conducive to learning, particularly in aspects of comfort, illumination, and spatial design. However, the lower ratings in noise management and technological reliability suggest the need for facility enhancement and infrastructure upgrading. Consistent with previous studies, improving environmental comfort and digital accessibility can foster both academic performance and learner satisfaction in higher education contexts [1; 6; 13].

Table 2.2 Perceived Quality of Study Spaces and Learning Environments of BPED Students in Terms of Digital/virtual study spaces (Google Classroom)

Digital/virtual study spaces (Google Classroom)	Mean	SD	Interpretation
I can access Google Classroom easily on my devices.	4.16	0.87	Agree
The platform is user-friendly and easy to navigate.	4.15	0.79	Agree
I rarely experience technical problems (e.g., loading, errors, and login issues).	3.77	1.07	Agree
Learning materials (readings, slides, videos) are easy to access and download.	3.95	0.97	Agree
Assignments and instructions are clearly organized.	4.0	0.89	Agree
Google Classroom helps me keep track of deadlines and tasks.	4.18	0.9	Agree
The platform allows effective communication with my teacher.	3.97	0.89	Agree
Google Classroom provides	3.94	0.98	Agree

opportunities for interaction with classmates.

Feedback from teachers on the platform is timely and useful.	4.15	0.79	Agree
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Google Classroom supports collaborative learning (e.g., group activities, sharing files).	4.07	0.89	Agree
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The platform helps me stay engaged with the course.	3.99	0.9	Agree
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Google Classroom enhances my overall learning experience.	3.96	0.88	Agree
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I feel motivated to complete tasks using Google Classroom.	4.0	0.97	Agree
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Composite Mean	4.02	Agree
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The results in Table 2.2 reveal that the respondents generally agreed on the effectiveness and usability of Google Classroom as a digital or virtual study space, with a composite mean of 4.02. This indicates that Bachelor of Physical Education (BPED) students perceive the platform as a conducive and efficient medium for learning and interaction.

Among the indicators, the highest mean scores were observed in Google Classroom helps me keep track of deadlines and tasks ($M = 4.18$, $SD = 0.90$), I can access Google Classroom easily on my devices ($M = 4.16$, $SD = 0.87$), and Feedback from teachers on the platform is timely and useful ($M = 4.15$, $SD = 0.79$). These results highlight the platform's accessibility, organizational efficiency, and communication functionality, which are crucial for maintaining academic engagement and performance in an online setting [6; 13].

The results also show that I rarely experience technical problems ($M=3.77, SD=1.07$) and Google Classroom provides opportunities for interaction with classmates ($M = 3.94$, $SD=0.98$) obtained slightly lower ratings, suggesting that while students find Google Classroom effective, technical and connectivity challenges remain barriers to full engagement. This finding is consistent with Coelho et al. [11] and Ramli and Zain [4], who reported that infrastructure and technological limitations can influence students' satisfaction with digital learning environments.

Furthermore, the indicators the platform helps me stay engaged with the course ($M=3.99$, $SD=0.90$) and Google Classroom enhances my overall learning experience ($M=3.96$, $SD=0.88$) affirm that digital learning spaces can promote student-centered learning and active participation when appropriately integrated into pedagogical practices [1]. Overall, these results affirm that Google Classroom serves as a reliable, accessible, and well-organized digital study space that enhances students' academic experience, aligns with the growing emphasis on technology-driven education, and complements physical study environments in fostering effective learning.

The results in Table 2.3 reveal that the BPED students generally agree on the favorable quality of their physical and specialized learning spaces, as shown by a composite mean of 3.84 ($SD = 1.01$). This indicates that the respondents perceive

their gymnasiums, sports fields, laboratories, and studios as adequate and conducive to practical learning experiences. Among the indicators, the gymnasium obtained relatively high ratings ($M = 4.04$, $SD = 1.05$), suggesting that it provides sufficient space for conducting physical education courses and drills. The design and space of studios ($M = 3.94$, $SD = 0.97$) and the availability of facilities for a variety of PE activities ($M = 3.96$, $SD = 0.91$) were also rated favorably, implying that these areas promote engagement and active participation. The results emphasize that physical environments supporting movement, collaboration, and practice foster motivation and learning among PE students. This aligns with the findings of Coelho *et al.* [11], who emphasized that inclusive and well-designed school spaces enhance participation and learning effectiveness.

Table 2.3 Perceived Quality of Study Spaces and Learning Environments of BPED Students in Terms of Physical/specialized learning spaces (gymnasiums, sports fields and courts, laboratories, and studios)

Physical/specialized learning spaces (gymnasiums, sports fields and courts, laboratories, and studios)	Mean	SD	Interpretation
The gymnasium provides sufficient space for practical PE courses and drills.	4.04	1.05	Agree
The gym is well-maintained and conducive to learning physical skills.	3.87	1.04	Agree
The facilities in the gym support my performance assessments effectively.	3.85	0.98	Agree
Sports fields/courts (basketball, volleyball, track & field, swimming pools) are accessible for practice and learning.	3.62	1.17	Agree
The condition of the sports fields/courts supports effective skill development.	3.82	0.98	Agree
I feel motivated to learn when classes are conducted in these facilities.	3.89	0.97	Agree
The laboratories (exercise physiology, biomechanics, and motor learning labs) are adequately equipped for PE studies.	3.63	1.1	Agree
The environment in the labs allows me to apply theory into practice.	3.79	0.99	Agree
Laboratory sessions enhance my understanding of physical education concepts.	3.79	1.0	Agree
Multipurpose halls/studios are available for dance, aerobics, and movement-based courses.	3.87	0.98	Agree
The design and space of the studio encourage active participation.	3.94	0.97	Agree
The facilities support a wide variety of physical education activities.	3.96	0.91	Agree
Composite Mean	3.84	1.01	Agree

Similarly, Llorens-Gámez *et al.* [1] highlighted that physical design elements such as spatial arrangement, lighting, and accessibility affect students' attention and memory, which is crucial for performance-based courses like physical education. The gym's maintenance and accessibility of sports

fields ($M = 3.62$ – 3.89) further reinforce that well-maintained, safe, and functional environments contribute to better physical performance and skill acquisition, echoing Ramli and Zain [4], who found that school facilities significantly impact students' achievement and engagement.

Furthermore, the laboratories ($M = 3.63$ – 3.79) were rated positively, indicating that these spaces allow BPED students to apply theoretical concepts into practice, consistent with LeGrow *et al.* [6], who emphasized the importance of functional learning spaces in enhancing student experience and professional skill development.

Overall, the findings suggest that the BPED students' learning environments, particularly gymnasiums and studios, provide a supportive and motivating atmosphere that promotes skill acquisition, collaboration, and engagement. This supports the assertion of Walker and Baepler [13] that the quality of learning spaces directly influences social relations and academic performance.

Table 3.1 presents the relationship between the perceived quality of study spaces and the academic performance (GPA) of BPED students. Results revealed that all computed Spearman Rho coefficients were close to zero, indicating no significant association between students' perceptions of their study environments and their academic performance.

Table 3.1 Relationship Between the Perceived Quality of Study Spaces and the Academic Performance of BPED Students

GPA	Spearman Rho	Degree of Relationship	p-value	decision
Study Spaces (Library and Classrooms)	-0.36	Negative Low	0.734	Non-Significant, Fail to Reject the Null
Digital/virtual study spaces (Google Classroom)	0.019	Negligible	0.859	Non-Significant, Fail to Reject the Null
Physical/specialized learning spaces (gymnasiums, sports fields and courts, laboratories, and studios)	-0.050	Negative Negligible	0.631	Non-Significant, Fail to Reject the Null

*Adapted from Calmorin

An $r \pm 0.00$ denotes zero correlation.

An r from 0.01 to ± 0.20 denotes negligible correlation.

An r from ± 0.21 to ± 0.40 denotes low or slight relationship.

An r from ± 0.41 to ± 0.70 indicates marked or moderate correlation.

An r from ± 0.71 to ± 0.90 shows high relationship.

An r from ± 0.91 to ± 0.99 denotes very high correlation.

An $r \pm 1.0$ indicates perfect relationship.

Specifically, the correlation between study spaces (library and classrooms) and GPA ($\rho = -0.036$, $p = 0.734$) shows a negative low and non-significant relationship, suggesting that students' views on the adequacy of classroom and library environments do not correspond with variations in their GPA. This supports the notion that while well-designed physical learning spaces can improve attention and engagement, they do not necessarily predict academic success [1].

Similarly, digital or virtual study spaces (Google Classroom) yielded a negligible correlation ($\rho = 0.019$, $p = 0.859$), indicating that students' satisfaction with online platforms has minimal influence on their performance outcomes. This aligns with LeGrow *et al.* [6], who observed that digital learning environments enhance flexibility and communication but do not automatically lead to improved

academic results. Moreover, Walker and Baepler [13] emphasized that digital classroom tools tend to foster engagement and collaboration more than measurable gains in grades.

Finally, physical or specialized learning spaces such as gymnasiums, laboratories, and studios also demonstrated a negative negligible relationship ($p = -0.050$, $p = 0.631$) with GPA, implying that even though BPED students agreed that these facilities support skill-based learning (Composite Mean = 3.84, "Agree"), their perceptions did not translate into measurable academic differences. This is consistent with Coelho *et al.* [11] and Ramli and Zain [4], who emphasized that well-maintained facilities enhance participation and motivation but have limited direct influence on academic performance.

Overall, these findings suggest that while study spaces, whether physical or virtual, contribute to a conducive learning experience, academic performance is shaped more strongly by instructional quality, learner motivation, and pedagogical factors rather than environmental perceptions [1; 11].

CONCLUSION

This study examined BPED students' academic performance and their perceived quality of study spaces, including physical, digital, and specialized environments. The results showed that most students achieved high levels of academic performance, with a large proportion falling under the Very Good category. Students also perceived their study spaces as generally conducive to learning, highlighting comfort, lighting, and accessibility as key strengths. However, issues such as inconsistent internet connectivity, noise levels, and limited interaction in some settings were noted.

Despite these positive perceptions, the results of the Spearman Rho correlation revealed no significant relationship between students' perceptions of study spaces and their academic performance. This finding suggests that while conducive environments enhance comfort and engagement, they do not directly translate to higher grades. Academic performance appears to be influenced more by factors such as teaching quality, student motivation, and learning strategies than by perceptions of environmental quality.

Overall, the findings affirm that study spaces play an important supportive role in the learning process by fostering focus, participation, and motivation. However, their impact on measurable academic outcomes remains limited. The results highlight the importance of viewing study spaces as essential complements to effective pedagogy and student effort, rather than as sole determinants of academic success.

RECOMMENDATIONS

Based on the findings of the study, it is recommended that educational institutions, particularly those offering the Bachelor of Physical Education program, continue to enhance both the physical and digital learning environments to sustain student engagement and overall academic success. School administrators should prioritize maintaining well-lit, comfortable, and ergonomically designed classrooms and libraries, while addressing concerns related to noise control

and the availability of reliable internet connectivity. Upgrading technological infrastructure and ensuring stable access to digital platforms such as Google Classroom can improve students' efficiency and communication, especially in hybrid learning settings.

For specialized physical learning spaces such as gymnasiums, laboratories, and studios, regular maintenance and equipment upgrading should be implemented to ensure safety, accessibility, and functionality. These facilities should also be designed to encourage collaborative, experiential, and performance-based learning experiences, aligning with the practical nature of the BPED curriculum. Teachers are encouraged to maximize these spaces through innovative pedagogical strategies that integrate both physical and digital tools, thereby enriching students' cognitive and psychomotor learning outcomes.

Furthermore, faculty and curriculum developers may explore incorporating flexible learning space designs that promote inclusivity, active learning, and adaptability to various teaching modalities. Student feedback on their learning environments should be periodically gathered to inform continuous improvement efforts. Lastly, future research may consider expanding the scope of study to include other teacher education programs or employ longitudinal designs to examine how changes in learning environments influence academic outcomes over time. Through these collective efforts, institutions can create a more dynamic and supportive ecosystem that nurtures both academic excellence and holistic student development.

REFERENCES

- [1] Llorens-Gámez, M., Higuera-Trujillo, J. L., Sentieri Omarrementeria, C., & Llinares, C. (2022). The impact of the design of learning spaces on attention and memory from a neuroarchitectural approach: A systematic review. *Frontiers of Architectural Research*, 11, 542–560. <https://doi.org/10.1016/j.foar.2021.12.001>
- [2] Makaremi, N., Yildirim, S., Morgan, G. T., Touchie, M. F., Jakubiec, J. A., & Robinson, J. B. (2024). Impact of classroom environment on student wellbeing in higher education: Review and future directions. *Building and Environment*, 265, 111958. <https://doi.org/10.1016/j.buildenv.2024.111958>
- [3] Rohmansyah, N. A., & Hiruntrakul, A. (2022). Effective learning environments in physical education. *Teoriâ ta Metodika Fizičnogo Vihovannâ (Physical Education Theory and Methodology)*, 22(3s), 1–7. <https://doi.org/10.17309/tmfv.2022.3s.11>
- [4] Ramli, A., & Zain, R. M. (2018). The impact of facilities on students' academic achievement. *Science International (Lahore)*, 30(2), 299–311.
- [5] Baafi, R. K. A. (2020). School physical environment and student academic performance. *Advances in Physical Education*, 10(2), 121–137. <https://doi.org/10.4236/ape.2020.102012>
- [6] LeGrow, K., Espin, S., Chui, L., Rose, D., Meldrum, R., Sharpe, M., & Gucciardi, E. (2023). Home away from home: How undergraduate and graduate students experience space and place in a new health sciences

- building. *Canadian Journal of Nursing Research*, 55(4), 447–456.
<https://doi.org/10.1177/08445621231190581>
- [7] Baars, S., Schellings, G. L. M., Joore, J. P., & van Wesemael, P. J. V. (2023). Physical learning environments' supportiveness to innovative pedagogies: Students' and teachers' experiences. *Learning Environments Research*, 26, 617–659.
<https://doi.org/10.1007/s10984-022-09433-x>
- [8] Leijon, M., Nordmo, I., Tievä, Å., & Troelsen, R. (2024). Formal learning spaces in higher education – A systematic review. *Teaching in Higher Education*, 29(6), 1460–1481.
<https://doi.org/10.1080/13562517.2022.2066469>
- [9] Margario, B. M. C., Solidarios, J. T., & Bual, J. M. (2022). Learning environment, motivation, and challenges of junior high students under physical education modular instruction. *Asian Journal of Education and Social Studies*, 31(4), 47–59.
<https://doi.org/10.9734/AJESS/2022/v31i430757>
- [10] Aclan, C. J. V., & Osorno, R. II. M. (2022). Learning environment and physical education teacher attitude as determinants of their perceived well-being. *European Journal of Physical Education and Sport Science*, 9(2), 176–190. <https://doi.org/10.46827/ejpe.v9i2.4562>
- [11] Coelho, C., Cordeiro, A., Alcoforado, L., & Moniz, G. C. (2022). Survey on student school spaces: An inclusive design tool for a better school. *Buildings*, 12(4), 392.
<https://doi.org/10.3390/buildings12040392>
- [12] Nja, C. O., Anari, M. I., Erim, C. M., Idiege, K. J., Ilhami, A., Ukah, J. U., Eneyo, O. E., Uwe, U. E., & Cornelius-Ukpepi, B. U. (2023). Learning space, students' collaboration, educational outcomes, and interest: Exploring the physical, social and psychological mediators. *Heliyon*, 9, e15456.
<https://doi.org/10.1016/j.heliyon.2023.e15456>
- [13] Walker, J. D., & Baeppler, P. (2017). Measuring social relations in new classroom spaces: Development and validation of the Social Context and Learning Environments (SCALE) survey. *Journal of Learning Spaces*, 6(3).