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RESEARCH ARTICLE

MODIFICATIONS IN THE PRACTICAL CLASSROOM FORENHANCING THE STUDENTS LEARNING EXPERIENCE

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Abstract

Learning spaces are not just physical settings; they actively shape how students feel, engage, and perform. This study emphasizes on the effect of rearranging the practical room in the Department of Family and Community Resource Management, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda. Using an experimental approach, feedback was gathered from 113 undergraduate and postgraduate students before and after the room was rearranged. Before the changes, students reported challenges such as uncomfortable furniture, limited circulation space, poor ventilation, and insufficient technological support.After therearrangementthey noted improvements in comfort, visibility, ambience, and overall usability, though some gapslike ergonomic furniture and digital accessremained. The findings show that even small, thoughtful adjustments to space can make a meaningful difference in learning experiences. The redesigning of the practical rooms that are not only functional but also inclusive,adaptable and responsive to the evolving needs of learners are preferred by the students.

Introduction:-

"Learning spaces should support the pedagogical, social, and emotional needs of students by being flexible, comfortable, and adaptable." - Peter C. Lippman (2010). The physical learning environment is increasingly acknowledged as a critical determinant of student engagement, academic performance, and overall well-being. The spatial arrangement, ergonomic quality, and aesthetic appeal of educational settings are no longer viewed as peripheral concerns but as essential components of effective pedagogy. "Space itself can influence learning; the physical environment communicates an implicit message about the institution's values and priorities" Oblinger (2006). This perspective underscores the need to design learning spaces that are not only functional but also aligned with pedagogical goals. Within the Department of Family and Community Resource Management department, the practical room functions as more than a conventionalclassroom. The physical environment plays an even more crucial role. The practical room within department serves as a dynamic learning laboratory where students engage in

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activities that bridge theory and practice. These include home management simulations, budgeting exercises, interior layout design, and resource assessments. Such tasks require a space that is adaptable, ergonomically sound, and conducive to both individual and collaborative learning. “Learning environments significantly impact student outcomes and psychological well-being” Fraser (1998), “The factors such as lighting, temperature, air quality, and furniture design significantly affect students’ cognitive outcomes and emotional states Barrett et al.” (2015), “The educational facilities should be viewed as “learning tools” themselves, capable of enhancing or hindering the educational process depending on their design and usability” Hackney (1999), “learning spaces shape the emotional tone and pedagogical quality of education” Woolner et al., (2007).

The physical learning environment lays a crucial role in shaping student engagement, comfort, and academic performance, particularly in disciplines that rely heavily on experiential and practical learning. In the context of Family and Community Resource Management, practical rooms serve as dynamic space where students engage in simulations, budgeting exercises, interior planning, and resource assessments. These activities demand environments that are not only functional but also ergonomically sound and aesthetically conducive to learning. However, many traditional classroom settings fall short of supporting these diverse needs, leading to reduced effectiveness in teaching and learning outcomes. This research is justified by its alignment with contemporary pedagogical goals that emphasize active learning, real-world application, and student-centered design. It seeks to explore how spatial factorssuch as lighting, furniture layout, acoustics, and overall room usabilityimpact students’ cognitive performance, emotional well-being, and collaborative engagement. By evaluating the current limitations of existing practical rooms and proposing evidence-based redesign strategies, the research aims to contribute meaningful insights that can guide institutional improvements and policy development.

The review of literature reveals that most of the studies have primarily focused on Food and Nutrition laboratories, Clothing and Textiles laboratories, or general classroom ergonomics. International facility guidelines, such as those developed by the New York State Education Department (2021) and the Hong Kong Education Bureau (2019), provide structured frameworks for designing Home Economics learning spaces. In contrast, Indian researches have largely focussed on kitchen ergonomics, furniture design, and workstation safety, with limited attention to the holistic design of Home Science environments (Kumar & Sharma, 2020; Singh, 2021). In the post-pandemic period (2022–2024), there has been a growing emphasis on the psychological, ergonomic, and spatial dimensions of learning environments, guided by principles of environmental psychology, learning space theory, and health-centered design.

Prominent works such as Design of Learning Spaces in the Post-Pandemic Era (Lee & Chang, 2022) and Refurbishing Classrooms for Hybrid Learning (Anderson, 2022) highlight the importance of flexible, technology-integrated, and well-ventilated classrooms that accommodate both in-person and hybrid learning. Similarly, recent reviews on indoor environmental quality (MDPI, 2025) and ventilation design (Undip Journal, 2022) underscore the significance of air quality, lighting, acoustics, and thermal comfort in ensuring safe and effective educational environments. Innovative studies such as Cardboard Architecture in Post-Pandemic Schools (Hernandez, 2022) further illustrate how adaptable, emotionally supportive, and sustainable spatial designs enhance students’ social and cognitive well-being. Collectively, these findings reveal the influence of spatial design, aesthetic quality, and ergonomic planning on student engagement, comfort, and learning outcomes. However, there remains a significant research gap in the design of practical classrooms for Family and Community Resource Management (FCRM) — a multidisciplinary field that integrates housing and interiors, consumer studies, ergonomics, and the management of time, energy, and money.

Its main contribution lies in presenting a comprehensive, learner-focused design model for practical room that goes beyond earlier studies limited to ergonomics or facility safety. By integrating spatial zoning, ergonomics, technology, and pedagogy, the research advocates for inclusive, flexible, and pedagogically aligned spaces that foster student engagement, collaboration, and skill development. Situated within the Indian higher education context, it fills a notable gap in Home Science research and offers a replicable framework that can enhance the quality of learning experiences in the departments across the country. In the context of Family and Community Resource Management, where students simulate real-life scenarios and manage complex tasks, the practical room must support multifunctionality, sensory comfort, and technological integration.

This research aims to explore the relationship between physical learning environments and student outcomes within the discipline, focusing specifically on the design, usability, and effectiveness of the practical room as a pedagogical space. The present research focuses on positioning the practical room as a crucial learning environment that links theoretical knowledge with practical application. It aims to develop a student-centred design framework that enhances engagement, supports skill development, and addresses the existing limitations in practical learning spaces. Through this approach, the research intends to help improve institutional practices and also contribute to the wider understanding of how learning spaces affect student learning.

Objectives of Research: -
1. To assess the problems experienced by the students in the existing arrangement of practical room.
2. To rearrange the existing layout in the practical room to improve spatial efficiency.
3. To gather and analyse student's satisfaction on room usability and comfort before and after rearrangement of the practical classroom.

Hypothesis of the study
1.There will be a difference in the extent of satisfaction of the respondents before and after rearrangement of the practical classroom.

Material and Method: -

Research Design: -
The present study was an experimental research design employing a pre-test and post-test approach to evaluate the effectiveness of rearranging the practical room on students' satisfaction and learning experiences. The design compared student perceptions before and after spatial modifications were implemented by the researcher. This approach enabled a direct assessment of how physical environment changes influenced user comfort, engagement, and perceived usability of the space.

Locale of the Study: -
The research was conducted in the Department of Family and Community Resource Management , Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. This space was selected due to its multifunctional academic use for practical sessions, simulations, and collaborative activities.

Population and Sample: -
The study population comprised ofundergraduate and Postgraduate students enrolled in the Department of Family and Community Resource Management. The sample comprised of 113 First-Year, Second Year, Third-Year B.Sc. Students, Junior and Senior M.Sc. Students who used the practical room on a regular basis.

Research Instrument: -
A structured questionnaire was used to gather data regardingrespondent's satisfaction towards the physical and functional aspects of the practical classroom. The tool included items related toroom fixtures and environmental conditions (lighting, ventilation, cleanliness), writing and display tools (chalkboard, display boards), furniture design and comfort (chair height, layout, ergonomics), technology and accessibility (projector, switchboards, power outlets) and storage, cleanliness, ambience, and visual design. Each statement was rated using a binary response scale (Yes/No) to determine levels of satisfaction before and after rearrangement.

Procedure of the Study: -
Phasei – Preliminary Assessment (Before Rearrangement): **-**
The researchers first collected data from the students regarding their perception towards the existing layout of the practical room.

Phaseii – SpatialRearrangement and Implementation: -
Based on the identified issues, the researcher executed repositioning the projector for improved visibility, reorienting furniture for better circulation, and aligning the chalkboard to the north wall following ergonomic recommendations.

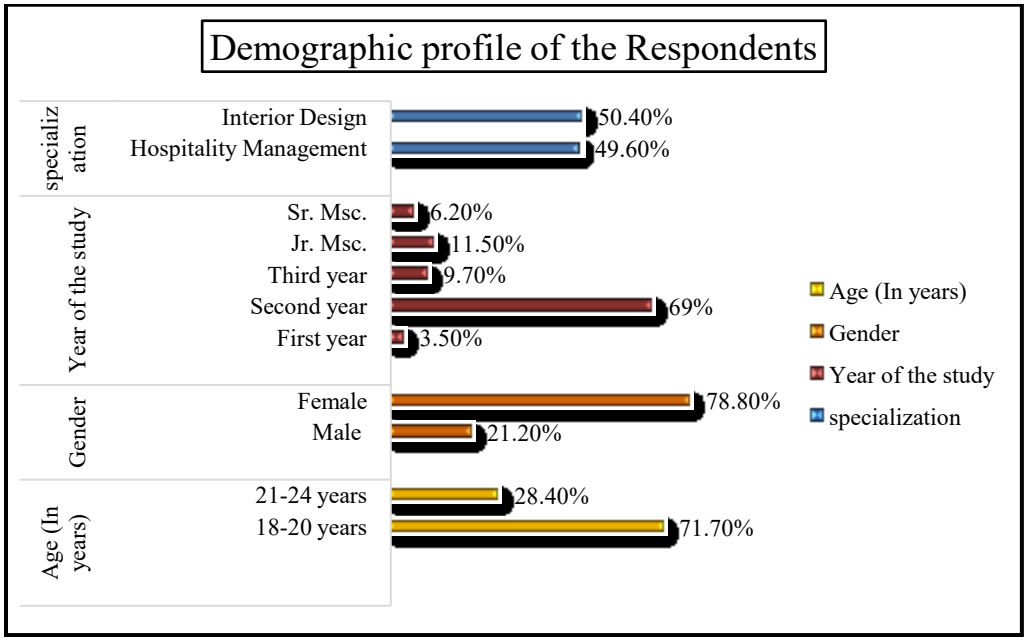
Phaseiii-post-rearrangement assessment: After the modifications, the same questionnaire was re-administered to the same group of students to measure any changes in satisfaction levels and perceived usability of the space.

Data Analysis:
The collected data were tabulated and analysed using descriptive statistical methods, primarily frequency and percentage analysis. The results were then categorized under key themes—physical environment, instructional visibility, furniture comfort, technological access, storage, and ambienceto facilitate comparative interpretation of pre- and post-rearrangement findings.

Results: -

The results of the present research were divided as follows: -
Section 1: The demographic profile presents the respondents who participated in the research. A total of 113 students from the Department of Family and Community Resource Management were included in the sample. These participants regularly used the practical room for academic activities.The data revealed that 71.7 per cent of the respondents belonged to the age group of 18-20 years followed by 28.4 per cent of the respondents belonged to the age group 21-24 years. More than three-fourth of the respondents (78.8 per cent) were females and 21.2 per cent of the respondents were males. The data regarding year of study of the respondents revealed that 69 per cent of them were studying in Second year of their Undergraduate Programme and 11.5 per cent of the respondents were studying in Junior Masters, Postgraduate programme. Regarding the specialization, it was found that 50.4 per cent of the respondents were pursuing their education with Interior Design specialization followed by 49.6 per cent of the respondents in Hospitality Management specialization.

Figure 1
Percentage Distribution of the Respondents according to their Background Information.



Note. This figure presents the demographic profile of respondents categorized by specialization, year of study, gender, and age. It provides context for interpreting the survey results and understanding the composition of the sample population.

Extent of Satisfaction of the respondentsregarding the existing arrangement of the Practical Classroom The present section covered information on the satisfaction of the respondents regarding the practical classroom before the rearrangement as suggested by the researcher.

Table 2
Extent of satisfaction towards existing arrangement of the Practical Classroom.

Satisfaction level	Range of score	f	%
Low	39-58	84	78.8%
High	59-78	29	25.7%

Note. f = frequency; % = percentage.

The data presented in Table 2 reveals the overall distribution of respondents based on their extent of satisfaction of the respondents regarding the existing arrangement of the practical classroom. The findings reveal that majority of respondents (78.8 per cent) reported a high frequency of satisfaction, scoring within the 39–58 range, indicating that they were largely satisfied with various aspects of the existing practical room. In contrast, 78.8 per cent of the respondents exhibited a low frequency of satisfaction, falling within the 39-58 range, suggesting comparatively lower contentment with the room's existing conditions before the rearrangement.

An in-depth analysis on the satisfaction of the respondents revealed 50.4 per cent of respondents opined that ventilation was adequate and 40.7 per cent of the respondents appreciated the role of curtains in controlling lighting, only 29.2 per centof the respondents opined that the fans were sufficient and produced effective cooling, and 32.7 per cent of the respondents reported that the door of the classroom often caused noise or distractions. Regarding writing and display tools, 50.4 per cent of the respondents opined that they were satisfied with the placement of chalkboard in the classroom as it was visible without any distractions. The drawing boards were found to be functional by 42.5 per cent of the respondents followed by 47.8 per cent of the respondents who opined that the seating was uncomfortable. Regarding the placement of the projector, 47.8 per cent of the respondents opined that it was appropriately placed followed by 41.6 per cent of the respondents who opined that the switchboards in the classroom were adequate and accessible.

Extent of Satisfaction of the respondents regarding rearrangement of the Practical Class room. This section describes the extent of Satisfaction of the respondents regarding rearrangement of the Practical Classroom

Table 3
Extent of satisfaction regarding rearrangement of the Practical Classroom.

Satisfaction level	Range of score	f	%
Low	39-58	0	0
High	59-78	113	100%

Note. f = frequency; % = percentage.

The data presented in Table 3 reveals the overall distribution of respondents based on their extent of satisfaction with the use of the practical room after rearrangement. The findings indicatedthat cent per cent of the respondents reported a high extent of satisfaction, scoring within the 59-78 range, demonstrating that all participants were highly satisfied with various aspects of the existing practical room.

An in-depth analysis regarding the satisfaction of the respondents revealed that 45.1 per cent of respondents were satisfied with the ventilation being adequate, 56.6 per cent of the respondents were found to be satisfied with the curtains as a window treatment in the practical classroom after the rearrangement. The percentage of respondents was found to be increased as 80.4 per cent of respondents were satisfied with the visibility of the chalkboard and display boards in the practical classroom after the rearrangement Comparative Visualization of the Practical Room Layout Before and After Rearrangement.

HO_1**: There exists no difference in the extent of satisfaction of the respondents before and after rearrangement of the practical classroom.**

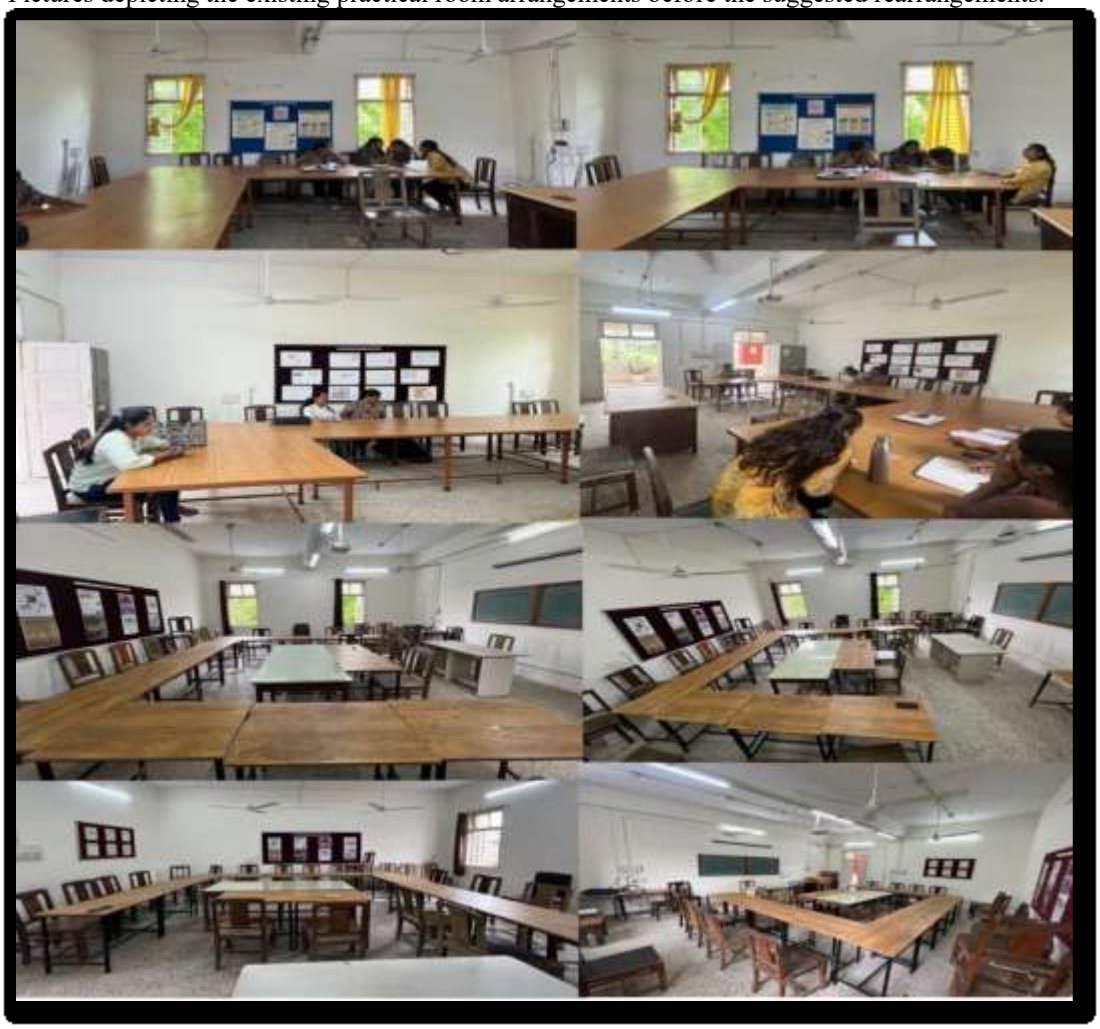
Paired t test was computed to find out the difference in the extent of satisfaction of the respondents before and after rearrangement of the practical classroom.

Table 4:
Paired t-test showing difference in the extent of satisfaction of the respondents before and after rearrangement of the practical classroom

Variables	Mean Score of Knowledge	t-value	df	Level of Significance
Pretest	**46.33**	**11.87**	**112**	**0.05**
Post Test	**72.28**			

The computation of t-value showed significant difference in the extent of satisfaction of the respondents before and after rearrangement of the practical classroom. Hence, the null hypothesis was rejected (Table 4). Therefore, it was concluded that the extent of satisfaction of the respondents differed before and after rearrangement of the practical classroom.

Figure 2
Pictures depicting the existing practical room arrangements before the suggested rearrangements.



Note.This figure captures the environmental and spatial conditions of the practical room before modifications were made. It highlights the static furniture layout, restricted circulation space, and basic lighting and ventilation setup, which contributed to student-reported discomfort and reduced usability for group activities.

The image in figure 2 showcase the original arrangement of the practical room in the FCRM Department, Faculty of Family and Community Resource Management, The Maharaja Sayajirao University of Baroda. This setup reflects the spatial layout before the room was rearranged to improve functionality,comfort, and learning engagement.

Figure 3
Rearranged Practical classroom as suggested by the researcher

Note. This figure illustrates the practical room after spatial arrangement. The revised layout reflects enhanced flexibility, diversified furniture use, and improved environmental conditions, aligning with student feedback and promoting a more inclusive and functional learning environment.

Therevised layout presented in Figure 3 was thoughtfully implemented in response tostudent feedback collected during the study.To improve visibility, the projector was repositioned to ensure unobstructed sightlines for all learners. The orientation of chairs and tables were strategically adjusted to foster a more cohesive and participatory learning environment. The teacher's table directionwas changed to face students directly, facilitating stronger teacher–student connection and ensuring a smoother flow of instruction. Additionally, the blackboard was relocated to the northern wall, aligning with Vastu principles that recommend north-facing placement for enhanced concentration and energy flow. Furthermore, distinct zones were designated for group discussions and hands-on

practical work, promoting focused collaboration and effective task-based learning. These spatial modifications were designed not only to minimize distractions and improve physical comfort, but also to support meaningful interaction and instructional clarity during practical sessions. By integrating student perspectives and cultural design considerations, the updated layout reflects a learner-centred approach that enhances both pedagogical effectiveness and the overall classroom experience.

Conclusion:-

The present research highlights the importance of evaluating learning environments through direct student feedback, focusing on spatial, functional, and environmental aspects of the practical room in the Department of Family and Community Resource Management at The Maharaja Sayajirao University of Baroda. Before the rearrangement, students reported discomfort due to furniture design, restricted movement, poor ventilation, and limited technological access. Post-rearrangement feedback, supported by paired t-test analysis, revealed significant improvements in seating comfort, instructional visibility, and overall ambience, though challenges like ergonomic support and power outlet availability persisted. These findings emphasize the value of participatory design in educational policy and align with Sustainable Development Goals — namely SDG 4: Quality Education (ensuring inclusive and effective learning environments) and SDG 11: Sustainable Cities and Communities (promoting safe, accessible, and resilient infrastructure). The research demonstrates that even modest, data-driven spatial changes can enhance learning quality, promote inclusivity.

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