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Exploring the Status of Campus' Non-instructional Facilities on Classroom Effectiveness

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ABSTRACT

The paper aims to explore the status of non-instructional facilities on classroom effectiveness. With the help of preceding research studies, the instructional facilities are categorized as, classroom size, condition of classroom, optimum thermal control, acoustic control, indoor air quality, ventilation, and lighting. For the current research study, qualitative research design is used. As classroom effectiveness necessitates conducive teaching-learning process, the data is gathered from three sources: through semi-structured interviews from teaching faculty and students of Department of Education, and Observation of facilities on rating scale. Triangulation techniques are employed for analysis of data. It is found that non-instructional campus facilities accelerate teaching-learning process. Both teaching faculty expressed satisfaction for condition and age of campus building, thermal and acoustic control, and indoor air quality. However, a few respondents require improvement in lightening conditions at afternoon as they find it difficult to concentrate on their lessons due to bright sunshine. It is therefore suggested we provide rooms with window blinds at daytime for effective classroom learning. Overall, the research study shows that the non-instructional aspect of the campus supports teaching-learning process, spacious for classroom discussions and activities, and soothing that overall makes the campus an effective learning place.

Keywords: Classroom facilities, classroom effectiveness, classroom condition, classroom environment, types of non-instructional components in educational setting

INTRODUCTION

Background

Educational environment is, as a rule, established for the purpose of teaching and learning process. This purpose is achieved by appropriately designing components of educational environments such as institutional buildings, furniture items, instructional materials, lighting, and thermal control. Physical arrangements are essential for educational outcomes as well as building institutions. That's why appropriate physical facilities need to be present for the achievement of any learning activity, and execution of any educational programme. Moreover, the condition of School facilities impact students' academic achievement (Earthman, 2002; Hijazi & Naqvi, 2006), and teacher effectiveness (Earthman, 2002). Moreover, DeFranco, representing Springfield Public Schools, Hatfield (n.d) states: "Students and staff in more comfortable environments- whether that's a result of daylighting or thermal comfort or clearer air- tend to perform better, because they have their basic needs met and at that point they are able to focus on more complex tasks."

As institutions provide lodging and protection for human and material resources, including educational equipment and facilities, the presence of adequate educational resources such as libraries, books, and physical infrastructure is vital for the smooth running of the educational process (Barrett et al., 2015). Numerous studies have explored the link between non-instructional facilities—like ventilation, lighting, and seating—and overall classroom effectiveness, indicating that such elements significantly influence learning environments (Wargoeki & Wyon, 2013; Mendell & Heath, 2005).

University facilities are primarily intended to support effective teaching and learning. However, overcrowding remains one of the most detrimental factors affecting students' academic performance. It contributes to elevated stress, reduced concentration, and impaired classroom engagement. Moreover, continuous exposure to environmental noise has been found to delay cognitive functioning and hinder reading skills, particularly in younger learners (Klatte, Bergström, & Lachmann, 2013; Shield & Dockrell, 2020).

This study presents an overview of how various aspects of building design, such as classroom size, room utilization, window access, and availability of resources, are significantly correlated with students' academic performance. Insufficient facilities and poorly planned building layouts often result in overcrowded classrooms, which are unsafe and obstruct both health and learning outcomes (Cheryan et al., 2014). Additionally, non-instructional spending has shown measurable effects on students' academic and behavioral performance (Barrett et al., 2015).

Although higher education plays a pivotal role in the socio-economic development of a country, many developing nations have yet to fully realize and implement its potential. Despite a growing awareness of its value, several complications—including limited infrastructure, underfunded institutions, and resource constraints—continue to obstruct progress. One of the most pressing issues is the rapidly growing population in countries like Pakistan, which puts immense

pressure on the limited number of higher education institutions, thereby contributing to overcrowding and reduced quality (Mendell & Heath, 2005; Wargocki & Wyon, 2013).

Moreover, addressing student dissatisfaction and conflict management within universities is essential for ensuring a productive learning atmosphere. The current state of higher education in many universities remains unsatisfactory from the students' perspective, largely due to the lack of physical and educational facilities, which continues to pose major barriers to institutional development (Cheryan et al., 2014). Non-instructional facilities comprise a central role in teaching and learning process. The large number of literatures on the importance of non-instructional facilities or presence of physical resources has shown great relevance to students' achievement, "U.S Department of Education cites over forty- academic research papers- researchers have repeatedly found a difference of between 5-17 percentile points between achievement of students in poor buildings and those students in above- standard buildings." (Center for cities and schools, University of California, 2008).

Moreover, appropriate physical facilities provide evidence for effective classroom environment for students and teachers at school level. However, there is dire need to explore the importance of non-instructional facilities on effectiveness on university level. Therefore, in the current research study, the researcher tried to explore the status of non- instructional facilities at NUML, Islamabad.

As, in the current research study, the researcher tried to explore the status of non- instructional facilities at NUML, Islamabad. It is hoped this research study will be a significant addition to upcoming researchers to open domain of research on importance of non-instructional facilities on classroom effectiveness. Moreover, this research study will be fruitful for students and teachers as it will be ground to improve classroom effectiveness. Further, it provides ample evidence to university administration to assess, evaluate, and modify the status of available non-instructional facilities at campus.

Objectives of the study

- To explore the status of campus' non-instructional facilities on classroom effectiveness.
- To explore how non-instructional facilities facilitate university teachers in teaching process?
- To identify how non-instructional facilities facilitate university students in learning process?
- To know What type of non-instructional facilities are further required by university teachers and students to improve classroom effectiveness.

LITERATURE REVIEW

Educational Resources

As the primary purpose of education is to bring desirable change in students' behavior and to do this an effective environment is needed where the process of

teaching and learning take place. Educational resources are means through which information is effectively communicated from the teacher to students. The physical facilities are major part of this process. There is strong relation between physical environment and performance of students. According to Labo- popoola, Bello and Atanda (2009) the quality of education is connected to the physical facilities and overall atmosphere in which learning takes place. Likewise, Ajayi (2009) stated that all over the world the current emphasis is on learner friendly environment which includes provision of facilities such as a good classroom, laboratories, functional libraries, hygienic environment and transportation as these resources have direct impact on both teaching and learning process.

Importance of physical resources

The concept of physical resources refers to the materials and facilities that can be seen, touched, and used directly. These include tangible assets such as buildings, furniture, classroom equipment, and learning materials. Physical resources play a crucial role in achieving educational objectives, as they support the creation of a conducive learning environment in the classroom (OECD, 2006; Earthman, 2004). These resources are essential for delivering effective instruction and facilitating student engagement and academic performance (UNESCO, 2017).

Highlighting the importance of physical resources for effective classroom. Mbakwen and Asiabaka (2007) stated that Physical resources are needed in appropriate quantity and quality, they said that unhealthy nature of environment, un-conducive classroom, effects the nature of learning and teaching. For effective teaching and learning a healthy environment a conducive classroom is needed with provision of required resources which are needed to fulfil teaching and learning requirements. Similarly, Ihuoma, Asiabaka and Mbakwem (2007) stated that for desirable and acceptable learning appropriate and adequate learning environment is crucial ,and as well as learning environment should be provided for the learners.

Different perceptions about physical resources

Different research has defined physical resources in different dimensions. According to Irfran (2014) physical resources are those resources which are essential to run an organization, including building, machinery which are needed for the day to day running of the organization. Likewise, it is stated by Encyclopedia of Education (2012), the school facilities consist of only the physical structure and the variety of building systems, such as mechanical, plumbing, electrical and power, telecommunications, security and fire suppression systems.

While according to Obanya (2009), physical resources such as didactic materials such as books, charts and computers are required to make learning and teaching possible and effective. Books charts and other such resources help to plan lessons effectively using these resources teachers can make teaching method more effective which will help the students to learn effectively. Similarly, Osifilia,(2008), defined that physical resources include laboratories, libraries, classrooms and infrastructure, it is further stated that resources including instructional and non-instructional are needed for effective learning and teaching.

Classrooms, furniture, instructional materials, electricity, toilet facilities, playgrounds, laboratories, libraries, and overall aesthetics are essential physical resources in an educational setting. These resources enable teachers to create a supportive and engaging learning environment. Without adequate physical resources, an educational institution cannot ensure an effective teaching and learning process. Furthermore, the availability and quality of these resources significantly influence both student academic performance and teacher effectiveness (Earthman, 2004; Lyons, 2001; UNESCO, 2017). As Akinsanya, (2010), added that the goals of any school depend on the availability of adequate resources that is why educational resources are important because these resources enhance teaching and learning. While according to Usman, (2007), stated that educational resources are central to education process because they play an essential role in achievement of educational objectives and goals by improving the effectiveness of teaching and learning.

Modern schools emphasize provision of proper environment for teaching and learning and such environment can be only introduced with the help of resources (Ajayi, 2009)

Many scholars have observed the positive influence of physical resources on students' academic performance. According to Ajayi (2007) instructional materials and other materials must be used where learning takes place. Along with the learning material the external environment should be well equipped, a conducive classroom should be maintained, so academic performance of students can be improved. In a comfortable environment students can be more attentive towards learning.

Olangunju and Abiola (2008), for the motivation and to stimulate the students towards learning utilization of resources is fruitful. Additionally, Usman (2007), noted that without ensuring proper resources for a classroom, a teacher cannot create change and progress in the learner. Because without resources and quality environment a teacher is not able to properly teach. For teaching and a safe and conducive environment is required.

According to Republic of Kenya (1988a) the development maintenance of physical facilities in educational institutions are very important and these resources should be sponsored and encouraged by communities and parents. This is because of lack of such physical resources learning can be enhanced and students' performance can be improved. Likewise, it is stated by Raju (1973) that in Kenya there are poorly equipped schools in rural areas and there was absence of effective environment for teaching. It relates to negative performance of both student and teacher. Additionally, Sifuna (1986) also presented views about this aspect and presented a correlation between school facilities and performance of learners. It is stated that school facilities have direct influence on student performance.

That is why education reforms in Nigeria, Tawari (1987) noted that new educational system should include all necessary resource in education, material and requirements should be provided at all levels of education system in order to achieve objectives of all level programs.

Aspects of non-Instructional facilities

The facilities of a university are primarily intended to support the institution's mission of teaching and learning. To effectively fulfill this purpose, several key aspects of physical facilities must be considered. These include acoustic quality, air quality, lighting, temperature, and available space. Each of these environmental factors contributes significantly to the comfort, concentration, and overall performance of both students and staff. Poor facility conditions can hinder learning outcomes, whereas well-maintained and optimized environments support academic success and well-being (Earthman, 2002; Schneider, 2002; Uline & Tschannen-Moran, 2008). These are addressed below.

Well-constructed buildings vs. Sub-standard buildings

Lyons (2001) further mentions that four research studies proved that students learning in better buildings had highest test scores than students learning in substandard buildings. And according to one study, difference in the scores of students learning in improved building to students learning in poor buildings may range from 5 to 17 percentile scores.

Acoustics and noise

Excessive noise in educational settings has been shown to contribute significantly to dissatisfaction and elevated stress levels among both students and teachers. Numerous contemporary studies indicate that classrooms with lower levels of external noise are positively associated with higher student engagement, concentration, and academic achievement compared to classrooms with noisy environments (Klatte, Bergström, & Lachmann, 2013). External noise disrupts cognitive processes such as memory retention and verbal comprehension, especially among younger learners. Consequently, the architectural design of educational institutions should prioritize soundproofing and noise-buffering strategies to enhance learning outcomes (Shield & Dockrell, 2020). Effective acoustic design—through insulation, layout planning, and material use—plays a crucial role in fostering a productive and less stressful learning environment.

In door environmental quality

Maintenance staff are often concerned with indoor air quality, as it directly affects the health, comfort, and performance of building occupants. Inadequate indoor air can result from malfunctioning ventilation systems or building designs that do not accommodate the current number of students. Poor air quality has been linked to increased absenteeism, headaches, fatigue, and decreased cognitive functioning, all of which negatively impact teaching and learning (Mendell & Heath, 2005; Wargoeki & Wyon, 2013). Educational facilities must therefore prioritize ventilation, filtration, and air circulation to ensure a safe and productive learning environment.

Lightning

Proper lighting significantly boosts the morale, well-being, and academic performance of both teachers and students. Natural lighting, in particular, enhances visual comfort, supports circadian rhythms, and improves mood and concentration

(Barrett et al., 2015). Poor lighting, on the other hand, can cause eye strain, drowsiness, and disengagement. Modern classrooms benefit from a combination of daylight and adjustable artificial lighting to support different instructional needs and learning styles (Heschong, 2002).

Acoustics and noise

As far as the acoustics and noise are concerned, it has been observed as a great source of mental health problems in both teachers and students within teaching and learning process. However, noise is well known as a sort of sound which we are not interested to listen. In fact, extreme noise causes dissatisfaction and stress in the students and teachers. Whereas, in many research classrooms with less external noise are positively related with greater student engagement and achievement associated to other classrooms that have noisier atmosphere (Castro-Martinez, Jaime, 2016). Thus, building the institution safeguards external noise from classroom can increase student's results.

In door environmental quality

Although indoor quality of the environment in educational institutions has been considered as an oldest problem in the teaching/learning spheres. Likewise, according to Hippocrates when air is unhygienic (polluted) it turns people into sickness. Moreover, Maintenance operators may be concerned with indoor air. Causes of poor air range from capacity ventilation systems to buildings that were not designed for the number of students (Karapetsis, Alexandros & Alexandri, Eleftheria, 2016). Therefore, Indoor Environmental quality (IEQ) is known as a vital factor for people's health and comfort, specifically within educational institutions. Because in institutions large groups of people spend a lot of time over there.

Relationships of Lightning and learning

Proper lightning facility is, primary as well as is an important element towards increasing the confidence of teachers and students in the teaching and learning process. Additionally, lighting meaningfully affects many levels of human working such as vision, circadian rhythms, mood, and intellect. Moreover, various research reported how the quality and color of lighting can also block or upgrade student's visual abilities and so academic performance (Gilavand, Abdolreza & Gilavand, Mohammadreza & Sakineh, 2016). The relationship of lightning and learning is much significant because through proper lightning students' level of focus and creativeness within the classroom might increase.

Controlled Temperature in the Classrooms

Since the few decades there were various research which have been conducted upon the controlled temperature in the classrooms in order to achieve sufficient learning results. It has been noted that uncomfortable temperature within the classroom leads to negative impact on student's learning. Although controlled temperature means the opposite temperature of the natural temperature likewise if the external environment of the classroom is hot than the environment within the classroom is cold or on the other hand if the external environment is cold so that the internal environment of the classrooms should be hot (Kurnitski, Jarek & Aalto,

Minna,2008).

Classroom Size and Space

The relationship among classroom and space is much interconnected. Classroom size leads to the number of students and as far as concerned with the classroom space belongs to the overall design or manufacturing of the classroom within the educational institutions(Yelkper, Namale, Esia-Donkoh & Ofosu-Dwamena.2012). However, it has been observed in many research that with minimum spaced classrooms with large number of students had a negative impact on students learning.

Twenty-First Century Learning

At the turn of the 18th century, technology began to be recognized as a critical component not only in the teaching and learning process but also in shaping the overall educational environment. In the 21st century, this view has significantly evolved. The concept of a classroom has expanded beyond traditional brick-and-mortar walls to include flexible, technology-enhanced environments. Contemporary research emphasizes the role of sustainable design strategies, which integrate advanced technologies to foster more effective and efficient learning spaces (Cheryan, Ziegler, Plaut, & Meltzoff, 2014). These strategies reflect a shift toward creating inclusive and stimulating educational settings that support diverse learning needs. Classrooms today are often equipped with interactive digital tools, smartboards, and real-time collaborative platforms that enhance student engagement and instructional delivery (Kuhn, 2016). Thus, modern scholarship consistently supports the view that physical resources—including technological infrastructure—have a substantial impact on the quality of learning and educational outcomes.

Optimum availability of physical resources creates.

1. conducive environment for teaching and learning.
2. help the learners to develop skills through extra-curricular activities.
3. motivates the school teachers in the execution of their duties.
4. helps in the retention of teachers through friendly teaching environment and good allowances.
5. helps to reduce vices, truancy and drop-outs among learners.
6. gives room for researchers to carry out research.
7. enhances the activities of teaching and learning.
8. makes room for continuity in education.
9. helps to reduce the fear of insecurity in the school environment.
10. gives job satisfaction to teachers.
11. helps in the actualization of educational goals through learner's and teachers' high performance.
12. As Akinsanya,(2010), added that to achieve goals of any school ,physical resources are important through utilization of physical resources teaching and learning can be enhanced.

METHODOLOGY

Research Design

The researchers used a qualitative research design. The purpose of this research studies is to Explore the status of Campus' non-instructional facilities on classroom effectiveness. Qualitative research design is preferred over quantitative research approach with reference to available literature, states some advantages of qualitative research. For instance, look for Cresswell or Gay and Airisian what they say about qualitative research. To conduct this research study, National University of Modern Languages is selected.

Population

The university has 28 departments across four faculties. However, the researchers focused of Department of Education population. In the Department of Education, five programs are offered; Bachelor of Education(B.Ed), Master of Arts in Education, Master of Educational Planning and Management (EPM), Masters in Philosophy of Education (M.Phil.), Doctor of Philosophy (Ph.D.). B.Ed, M.A (Education), MA (EPM) are offered in both morning and afternoon shifts. While M.Phil and Ph.D are offered only in afternoon shift. Based on two major components of teaching learning process, the faculty of Department of Education were also the respondents in this research study.

Sampling Selection Procedure

In the process of sample selection, the researchers selected particular sample using convenient sampling technique. The researcher found those respondents who were easy to access. According, Gall (2003) a convenient sampling refers to the selection of groups of people who are easily found and available to be studied. The convenient sampling technique is effective because it helps the researcher to easily approach the targeted population.

Research Sample

The sample research study comprised of five faculty members, and 10 students were selected. For faculty selection, only those teachers were selected who were teaching in both morning and afternoon shifts because they can provide better information about classroom environment of both morning and evening programs. While the students were selected from all five programs in morning and afternoon. From morning shift, the researchers selected; two students M.A(Education) out of 36, 1 from M.A (EPM) out of 50, 2 from B.Ed out of 144. Similarly, from afternoon shift, the researchers selected; one students M.A(Education) out of 53, 1 from M.A (EPM) out of 27, 1 from B.Ed. out of 29. Moreover, One respondent from M.Phil out of 26, and one out of five from Ph.D. Program.

Convenience sampling is a non-probability sampling method where participants are selected based on their easy accessibility and proximity to the researcher (Etikan, Musa & Alkassim, 2016). The study employed a convenience sampling technique to select participants from the Education Department across both morning and afternoon shifts. From the morning shift, the sample included 2 students from the B.Ed (Hons) program, 2 from the M.A Education program, and 1 from the M.A EPM program. In the afternoon shift, 1 student was selected from

B.Ed (out of 29), M.A Education (out of 53), and M.A EPM (out of 27). Additionally, the afternoon shifts also included 1 student from the M.Phil program (out of 26) and 1 from the Ph.D. program (out of 5). This selection ensured representation from all academic programs offered within the department while prioritizing accessibility and feasibility for the researcher.

Data Collection Tools and Procedure

The researcher developed semi-structured interviews to collect data. The research is qualitative in nature, so the semi-structure interview is used as an instrument. Two types of semi structure interviews were developed one for faculty members and one for students to explore the perceptions of both teachers and students.

Semi structure interviews are thought to be the preferred research data collection instrument. They help the researcher to probe further for clarity from interviewee. For this research study the interviews were held at peaceful places, and away from noisy areas as per the consent given by the interviewees.

- **Semi Structured Interviews**
- **Observation**

Due to time constraints, the current research study is conducted only at the Department of Education NUML, Islamabad. Moreover, the study has small samples and in future it needs to be conducted on large populations and more departments. The current research study is conducted only at the Department of Education NUML, Islamabad which is located in the basement of one block. Therefore, the study cannot be applied to other departments or universities.

Proposed Data Analysis Procedure

After semi structure interviews were completed, the qualitative data was then typed up, color coded and themes were developed. These were then coded and collected thematically in order to explore the perceptions of university faculty and students regarding status of Campus' non-instructional facilities on classroom effectiveness.

The research questions which were informed by the new literature review also guided the complete process. Relevant quotations were decorated and added to the themed headings. The responses were then recorded and coded. The main problems and themes around each question were then color coded and organized under the themes.

Ethical Consideration

According to Mckenna and Gray (2018), research ethics attends to defend the rights of applicants and they ensure that they are protected from needless destruction, and guarantee these approaches and applicable to the study purpose. According to Resnik (2011), ethical values are taught continuously in the life of a person and also society interaction are influenced. It is therefore dynamic for researchers and participants to trust each other.

The researcher guaranteed there was no impairment to participants by

maintaining confidentiality, ensuring interviews did not last longer than one hour or half hour, respecting any cultural differences, and having clear and relevant questions organized. Interviews were conducted at a time and place chosen by the researcher in discussion with the research participants.

Data Analysis Techniques

For data analysis first of all common themes and sub- themes from semi-structured interviews from both teaching faculty and students were highlighted through color-code the common themes and then identifying the sub-themes against each interview.

Data Analysis

Data Analysis gathered from Students

Category	Sub-Category	Effect on Learning Process	Emerging Code
Construction of Classroom	Physical Structure	"The physical structure of the classroom is attractive, so we can easily concentrate on our studies."	Attractive, Comfortable, Relaxing, Airy, good lighting, Light from ventilators as distractor, Peaceful, Furniture comfortable
Age of Classroom	Nature of learning experience in old vs new classrooms	"New classrooms positively contribute to learning, creating a comfortable environment."	Positive vibes in new constructed classrooms, Satisfactory, Helpful in generating new ideas, Positive contribution to learning, new building attractive, new building soothing, <u>new building</u> comfortable, Safety and security
Classroom Size	Classroom size facilitates mobility during discussions	"Classroom size is good for mobility during classroom discussions and lectures."	Classroom size facilitates learning, actively takes part in discussion, Helpful in grouping and pairing, Spacious
Classroom Temperature	Availability of heaters in Winter and fans in Summer	"Fans in summer and heaters in winter facilitate the learning process."	Moderate, Maintained, Good temperature, Facilitates learning, Availability of heaters in Winter and fans in Summer, No facility for harsh weather
Ventilation Classroom	in Ventilation	"Good ventilation helps us breathe fresh air, keeping us relaxed for studying."	Fresh air, Helps with concentration, Need for cross ventilation
Air Quality	Fresh air for relaxation	"Fresh air helps us to perform classroom activities and relaxes us."	Fresh and relaxing, Need for cross ventilation
Acoustic Effect	Control on internal and external noise	"Internal noise is controlled, but sometimes external noise affects our concentration."	Controlled inner noise, Disturbing sound from outside especially corridors
Lighting Classroom	in Electricity (Electric light) and Sunlight	"Lighting helps focus on writing, but sunlight can distract attention."	Electric light, Sunlight, Blinders should be placed
Overall Instructional Facilities	Non-Effectiveness of the classroom as a learning space	"The overall environment is helpful for learning, but some facilities need improvement."	Helpful, Comfortable, Make feel at home, Lack of few facilities
Improvements Needed	Areas for improvement in non-instructional facilities	"Lighting, air conditioning, windowpanes, furniture should be improved."	Lighting, Fresh air, Air conditioning, Windowpanes, Furniture to be comfortable

The data highlights various aspects of classroom non-instructional facilities that influence the learning process. For the physical structure of the classroom, students reported that an attractive, comfortable, and relaxing environment with good lighting enhances concentration. However, sunlight from ventilators can sometimes be distracting, signaling the need for improvement. Regarding the age of the classroom, new buildings were found to positively affect learning by offering a comfortable, secure, and soothing environment, as well as promoting new ideas.

In terms of classroom size, a spacious layout that allows for mobility during discussions facilitates better engagement and active participation. Temperature control is crucial, with fans in summer and heaters in winter ensuring a comfortable learning environment, though some respondents noted a lack of facilities for extreme weather conditions. Ventilation and air quality were also essential for maintaining a relaxed atmosphere, with fresh air contributing to better concentration.

The acoustic environment affects learning, as controlling internal noise is effective, but external disturbances from corridors can be a hindrance. Proper lighting is necessary, but excessive sunlight can be distracting, suggesting a need for blinds. Finally, while the overall environment is helpful for learning, certain facilities like lighting, air conditioning, and furniture require improvements to further enhance the learning experience.

Similarly, the data gathered from teaching faculty is also analyzed in same manner as analyzed for data collected from students.

Data Analysis from Teachers

Category	Sub-Category	Effect on Teaching Process	Emerging Code
Construction Classroom	of Physical Structure	Spacious classroom with good lighting and helpful technology	Spacious, good lighting, Helpful, Technology
Age of Classroom	Nature of learning experience in old vs new classrooms	New buildings with accessories enhance the teaching process and provide better classroom arrangement	New building with accessories, Classroom arrangement, Equipment support
Classroom Size	Classroom size for mobility during discussions	Classroom size facilitates teaching and is supportive for mobility during discussions and group work	Classroom size facilitates teaching, Supportive for mobility during discussion and group work, Suitable
Classroom Temperature	Availability of heaters in Winter and fans in Summer	Temperature control supports teaching by maintaining a comfortable environment	In winters, it is acceptable, Supportive for teaching, More cooling in winters
Ventilation Classroom	in Ventilation	Adequate ventilation supports the classroom environment, though summer conditions need improvement	Not in summer, Satisfied, Number of students are reasonable, Exhaust fans are available
Air Quality	Fresh air for relaxation activity and performance	Fresh air helps to relax and perform classroom activities more effectively	Fresh and relaxing, Need for cross ventilation
Acoustic Effect	Control on Internal and External noise	Controlling noise supports teaching by minimizing distractions from internal and external noise	Controlled, Overlapping of internal and external noise
Lighting Classroom	in Electricity (Electric light) and Sunlight	Adequate lighting helps in focusing during lessons, while bright sunlight can be a distraction	Electricity – produce light, Sunlight, Blinders should be placed
Overall Instructional Facilities	Non-Effectiveness of classroom as a learning space	The classroom environment is helpful but requires a manageable class size for optimal learning	Yes, Helpful classroom temperature, Air circulation helps a lot, Class size should be manageable
Improvements Needed in Instructional Facilities	Non-Required improvements in classroom facilities	Improvements needed in lighting, curtains, noise control, fresh air, and furniture to enhance the learning process	Lighting, Curtains, Noise should be controlled through carpeting, Fresh air, Air conditioning, Windowpanes, Window blinders, Cupboard

The data emphasizes various factors related to non-instructional facilities that contribute to the effectiveness of teaching. Regarding classroom construction, the spaciousness, good lighting, and the availability of helpful technology were all identified as crucial for supporting the teaching process. These elements enable the teacher to effectively engage students and make use of modern teaching tools. In terms of age, new buildings with modern accessories and improved classroom arrangements enhance the teaching process by providing better equipment support and a more organized space for educational activities.

Classroom size is another critical factor for teaching effectiveness. A suitable size facilitates mobility during discussions and group work, allowing the instructor to manage the class more effectively. This aligns with the findings that a manageable classroom size supports a more interactive teaching approach. Temperature control is equally important, with the availability of heaters in winter and fans in summer creating a comfortable environment conducive to teaching. However, the temperature regulation in extreme conditions could be improved.

The study also highlights the role of ventilation and air quality in maintaining a conducive teaching environment. Fresh air and good ventilation help to keep the classroom atmosphere comfortable, although summer conditions may need improvement in terms of cross-ventilation. The acoustic environment is another factor; controlling both internal and external noise minimizes distractions and helps teachers maintain focus in the classroom.

In terms of lighting, adequate lighting is necessary for teaching activities, though sunlight can sometimes be a distraction. The use of blinders was recommended to mitigate this issue. Finally, the overall effectiveness of classroom facilities in teaching is dependent on a manageable class size and a comfortable environment. However, improvements in lighting, noise control, furniture, and air conditioning were identified as areas requiring attention to further enhance the learning space for both students and teachers.

Triangulation of Data

The study reveals that non-instructional facilities significantly affect the teaching and learning environment from the perspectives of students, teachers, and researchers. Students emphasized the importance of an attractive, comfortable, and spacious classroom with good lighting to enhance concentration and learning. However, they noted that sunlight from ventilators could be a distraction. Teachers agreed that a spacious classroom with good lighting and technology support is essential for effective teaching. They also highlighted the need for classroom arrangements and equipment support in newer buildings.

Classroom size was identified as crucial for facilitating active participation and group work, while temperature control with heaters and fans in winter and summer was considered essential for maintaining comfort. Adequate ventilation and air quality were noted by both students and teachers as key factors in creating a relaxed and effective learning environment. Noise, both internal and external, was a

challenge, with noise control recommended to enhance concentration.

Lighting, though generally sufficient, was a concern due to sunlight causing distractions. The study suggests that improvements in lighting, noise control, air conditioning, and furniture comfort are necessary to optimize the teaching-learning process, ensuring a more conducive environment for both students and teachers.

Category	From Students Perspective	From Teachers Perspective	From Researcher's Observation
Construction of Classroom	<ul style="list-style-type: none"> • Attractive • Comfortable • Relaxing • Airy • Good lighting • Light from ventilators as distractor • Peaceful/ peaceful • Furniture is comfortable 	<ul style="list-style-type: none"> • Spacious • Good lighting • Helpful • Technology • Appropriate for optimum teaching-learning process 	<ul style="list-style-type: none"> • Positive and attractive • Spacious and well-arranged • Technology-enabled • Good lighting
Age of Classroom	<ul style="list-style-type: none"> • Positive vibes in new constructed classroom • Satisfactory • Helpful in generating new ideas • Positive contribution to learning • New building attractive • New building soothing • New building is comfortable 	<ul style="list-style-type: none"> • Supportive in execution of activities in classroom • New building with accessories • Classroom arrangement • Equipment support • Appropriate for optimum teaching-learning process 	<ul style="list-style-type: none"> • New building is more effective • Environment plays a vital role in creating a conducive learning environment
Classroom Size	<ul style="list-style-type: none"> • Classroom size facilitates learning • Actively take part in discussion • Helpful in grouping and pairing • Spacious 	<ul style="list-style-type: none"> • Classroom size facilitates teaching • Supportive for mobility during discussion and group work • Suitable 	<ul style="list-style-type: none"> • Fairly supportive for optimum teaching-learning process • Adequate space for discussions
Classroom Temperature	<ul style="list-style-type: none"> • Moderate • Maintained • Good temperature • Facilitates learning • Availability of heaters in Winter and fans in Summer • No facility cooling in winters for harsh weather 	<ul style="list-style-type: none"> • In winters, it is acceptable • Supportive for teaching • More 	<ul style="list-style-type: none"> • Appropriate for optimum teaching-learning process • Temperature management is crucial for learning
Ventilation	<ul style="list-style-type: none"> • Satisfied • Number of students are reasonable • Exhaust fans are available 	<ul style="list-style-type: none"> • Fairly supportive for optimum teaching-learning process 	<ul style="list-style-type: none"> • Fairly supportive for optimum teaching-learning process • Adequate ventilation needed
Air Quality	<ul style="list-style-type: none"> • Fresh and relaxing • Need for cross ventilation 	<ul style="list-style-type: none"> • Fresh and relaxing • Need for cross ventilation 	<ul style="list-style-type: none"> • Fresh and relaxing • Cross ventilation essential
Acoustic Effect	<ul style="list-style-type: none"> • Controlled inner noise • Disturbing sound from outside especially corridors 	<ul style="list-style-type: none"> • Controlled • Overlapping of internal and external noise 	<ul style="list-style-type: none"> • Fairly supportive for optimum teaching-learning process • Noise control is necessary
Lighting	<ul style="list-style-type: none"> • Electric light is good • Bright • Sunlight affects in afternoon, in morning good 	<ul style="list-style-type: none"> • Electricity – produce light – UPS • Sunlight affects • Blinders should be placed 	<ul style="list-style-type: none"> • Fairly supportive for optimum teaching-learning process • Lighting setup is crucial, especially for different shifts

Findings

Category 1: Construction of classroom. It is appropriate for teaching learning process because is comfortable, attractive, airy, and provide with technology as one of the respondent states, ““As, the physical structure of classroom is attractive, we can easily concentrate on our studies.” Yet, another respondent reports, “Yes, comfortable, and airy, good lighting, so we feel relax during our classroom activities.” However, one respondent expressed views about sunlight in words, “During the class, the light coming from the ventilators disturb us.”

As researchers, we found that construction of classrooms has positive effect on teaching learning processes, hence, it adds to classroom effectiveness.

Category 2: Age of Classroom. According to the present research study, newly constructed buildings are more helpful in teaching leaning process, as new building gives “positive vibes,” soothing effect, and makes it helpful to execute various teaching-learning activities. Which can be illustrated from views of our respondents, ““In new building, we have A.V Aids and they increase our understanding.” Additionally, “Environment plays a vital role upon the mental status and helpful for learning new ideas as well as it helps in generating new ideas.” And also “The construction of the classroom has great effect on the learning experience. The newly constructed rooms positively contribute to learning; comfortable environment leads to better learning.” Moreover, new buildings are also sign of safety and security as reflected by one the student, “New building enhance our learning process, in good atmosphere, I feel safety and security.” It is therefore concluded that newly constructed classrooms positively adds to classroom effectiveness.

Category 3: Classroom Size: classroom size effects learning and teaching. A good classroom size facilitates teachers for mobility which enables teachers to monitor students properly. It facilitates teaching and learning. This research revealed that classroom size is effective for teaching and learning.

Category 4: Classroom Temperature. Classroom temperature effects the environment of classroom. Moderate classroom temperature is needed to maintain comfortable environment for teaching and learning. This research study revealed that proper system for winter and summers is essential as it affects learning and teaching.

Category 5: Ventilation: fresh air adds to effectiveness of learning environment, so proper ventilation is required. This research study revealed that proper airy classrooms keep classroom fresh and keep students active.

Category 6: Air Quality: this research study revealed that for optimum learning good air quality is required as in messy classrooms students cannot fully concentrate on their studies. So fresh and airy classrooms facilitate students and teachers for effective teaching and learning.

Category 7: Acoustic Effect: overlapping of internal and external noise causes disturbance and students can focus on indoor happenings which create a gap between teaching and learning. It is revealed that controlled inner and outer noise

can help students to focus on lectures and indoor classroom activities and it increase the concentration level among students.

Category 8: Lighting: lightening is an important factor which effects classroom physical environment. This research study revealed that for different shifts at universities it requires proper setup for lightning, like for evening classes a proper lighting system is needed.

The findings of this study underscore the critical role of non-instructional facilities in shaping classroom effectiveness. Non-instructional facilities, including classroom construction, size, temperature control, air quality, ventilation, lighting, and acoustics, are all pivotal to creating an environment conducive to both teaching and learning. These physical factors significantly influence the ability of students to focus, participate, and engage in the learning process, as well as the ability of instructors to teach effectively.

DISCUSSION

The data from the three tables provided gives us a comprehensive view of how non-instructional facilities (such as classroom construction, temperature, ventilation, lighting, and air quality) affect the teaching and learning process from the perspectives of students, teachers, and researchers. The analysis of these factors reveals the crucial role that a well-maintained classroom environment plays in fostering a productive learning atmosphere.

Construction of Classroom:

From students' perspectives, the physical structure of the classroom should be attractive, comfortable, and airy with good lighting. These elements contribute to a relaxing and peaceful environment conducive to concentration. Teachers echoed these sentiments, emphasizing the importance of spaciousness and helpful technology in the classroom. Researchers observed that the new classrooms were not only spacious and well-arranged but also technology-enabled, which supports the overall teaching and learning experience. These findings are consistent with research by Earthman (2002), which emphasizes the impact of the classroom environment on academic success. An environment that is both comfortable and well-lit provides the foundation for better student engagement and concentration (Usman, 2007).

Age of Classroom

Both students and teachers highlighted the positive contribution of new buildings to the learning environment, noting that they are more soothing and comfortable. New classrooms with modern accessories and well-thought-out classroom arrangements support teaching effectiveness and foster new ideas. According to DeFranco (n.d.), modern buildings offer better equipment and classroom arrangements, which enhance instructional activities. The safety and security in these new classrooms also contribute to the peace of mind of both students and teachers, reinforcing the idea that a conducive learning environment is integral to student success.

Classroom Size

Classroom size was recognized as a vital factor for both students and teachers. Students appreciated that classroom size facilitates learning, enables active participation, and aids in grouping and pairing. Similarly, teachers emphasized the importance of mobility and interaction during discussions and group work. These findings align with Yelkperi et al. (2012), who pointed out that smaller classrooms promote better engagement and teacher-student interaction. Researchers found that a manageable classroom size provides adequate space for discussions, leading to a more effective learning environment. Thus, classroom size plays a pivotal role in fostering active participation and collaboration among students.

Classroom Temperature and Ventilation

Temperature and ventilation were repeatedly cited as factors that influence comfort in the classroom. Students and teachers agreed that moderate and maintained temperatures, with heaters in winter and fans in summer, were crucial for creating a comfortable learning environment. Researchers observed that temperature management is essential for optimal learning (Kurnitski et al., 2008). Ventilation was also a key concern, with students and teachers noting that fresh air supports relaxation and focus. However, the need for cross-ventilation during warmer months was identified as an area for improvement, highlighting a gap in current facility management. This aligns with findings by Karapetsis and Alexandri (2016), which emphasize the importance of indoor air quality in maintaining student focus and reducing fatigue.

Acoustic Effect and Lighting

The acoustic environment in classrooms was another crucial element. Both students and teachers reported that internal noise was generally controlled, but external noise, especially from corridors, distracted students' concentration. Noise control measures, such as carpeting and soundproofing, were recommended to improve the learning environment. This is supported by Castro-Martínez (2016), who suggested that excessive noise disrupts both learning and teaching. Lighting was also a significant factor, with students and teachers agreeing that adequate lighting helps in focusing during lessons. However, sunlight was sometimes seen as a distraction, especially in the afternoon. The installation of blinders or curtains was proposed to mitigate this issue, ensuring better lighting control. This finding resonates with research by Gilavand et al. (2016), who highlighted how lighting directly impacts students' ability to concentrate.

Overall Non-Instructional Facilities

Students, teachers, and researchers all agreed that the overall classroom environment is helpful for learning but that improvements are needed in specific areas, such as lighting, fresh air, air conditioning, and furniture comfort. While classroom temperature and air circulation were deemed helpful, improvements in noise control, ventilation, and the installation of air conditioning were identified as key areas for enhancing the learning environment. This aligns with the recommendations of Usman (2007), who suggests that improvements to physical facilities, such as furniture and ventilation, are necessary to optimize academic

performance.

CONCLUSION

The study underscores the importance of non-instructional facilities in enhancing the teaching and learning process. Classroom factors such as size, temperature, ventilation, lighting, and acoustic control play a significant role in creating a conducive environment for learning. The findings highlight the need for further improvements in certain areas, such as lighting, noise control, and air quality, to maximize student engagement and teaching effectiveness. Ensuring these elements are addressed will contribute to better learning outcomes and a more productive classroom environment.

Recommendations

It is recommended that windows be furnished with window blinds to serve a dual purpose: providing safety from the bright daylight in the afternoon and acting as a barrier between the classroom environment and the external corridors. This will help maintain a comfortable and focused atmosphere for students and teachers. Additionally, to minimize the overlapping of internal and external noise, it is suggested that floor carpeting be installed. This will reduce disturbances caused by external noise, ensuring a quieter and more conducive environment for teaching and learning.

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