

RESEARCH ARTICLE

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The role of the physical environment in improving the quality of the teaching and learning process

Laiche Samiha

Higher School for Teachers "Taleb Abderrahmane", Laghouat, Algeria

EMAIL: s.laiche@ens-lagh.dz

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Abstract

The physical environment is among the most important environments influencing learners, as it is the setting where they spend most of their time. The classroom is the place in which learners receive information, acquire values and attitudes, and engage in diverse educational activities. Therefore, an appropriate physical environment is necessary to ensure the optimal functioning of the teaching–learning process. A suitable physical setting also affects learners' psychological well-being through their sense of safety, contributes to increased activity and academic achievement, develops abilities and skills that support personality formation, and enhances understanding and assimilation of curricular content thereby improving the quality of educational outputs. This paper addresses: (a) definitions of the physical environment and quality in education, (b) the importance of both quality and the physical environment in education, (c) factors supporting the application of quality in education, (d) the requirements and conditions of the physical environment, (e) the teacher's role in organizing the physical environment, and (f) the effect of physical conditions in educational institutions on productive quality.

Keywords: physical environment; quality; teaching–learning process.

Introduction

Organization in the field of social work has long held a prominent position in societies, past and present, because it constitutes the general framework for lifestyles, living patterns, and ways of working. It encompasses all aspects of a society's activities. Workers are considered the fundamental asset in any organization; therefore, organizations seek to benefit from their workers by providing what they need and creating a positive climate. This is reflected in improved quality and performance,

and in employees' attachment to the institution so that organizational goals and personal goals are achieved.

The term *climate* is metaphorically related to the environment and the natural characteristics of a geographic location. It describes seasons and interactions distinguishing one place from another. This concept is applied to the workplace in the sense that the organization is a dynamic entity whose human and non-human components interact. An institution's success in creating a suitable climate encourages purposeful work and motivates employees. Likewise, schools (and those concerned with schooling) should attend to the physical conditions of teachers, workers, and administrative staff to achieve stability and institutional coherence. In a supportive organizational environment, individuals feel valued, experience the ability to participate in decision-making, and develop a sense of loyalty to the organization. Organizations strive to cultivate such loyalty because it encourages higher effort and a stronger desire to remain, even when alternative job opportunities exist especially when the institution provides essential needs. Conversely, a poor climate creates a strong desire to disengage and a reduced willingness to work.

The school is a connecting link between home and society: it raises children according to what society wants them to become in the present and the future. As John Dewey described, the school is a refined miniature of the broader society with which it interacts and develops over time as new educational philosophies emerge. Therefore, school staff should work to create a supportive climate that motivates employees to exert their best efforts, while also providing appropriate physical conditions that improve the educational process and support both teacher and learner. Without such conditions, neither party can reach the intended objectives.

Teaching is a cooperative process between teacher and student. The teaching profession requires individual skills and dispositions; not everyone who learns about teaching becomes an effective teacher. Teaching is also communication between teacher and learner, and it is an art not everyone can perform especially because it involves working with minds. For this communication to be effective and fruitful, supportive physical conditions and an appropriate organizational climate should be provided in schools and universities.

Literature Review:

Definition of Key Terms:

Physical Environment

This concept consists of two terms: **environment** and **physical**. The Cambridge Dictionary (2010) defines *environment* as air, water, land, and their combined effects on living organisms (humans, animals, and plants). The term *physical* refers to material components that can be seen or touched and are governed by natural laws (Ahmad, n.d., p. 13).

The physical environment is also defined as the classroom climate that helps both teacher and learner achieve educational goals with less effort and time (Al-Jumaili et al., 2009, pp. 146–149). In the educational field, it is the process of physically preparing the classroom environment so it becomes comfortable and pleasant, and providing it with materials, tools, and devices that facilitate learning (Hamed, 2006, p. 235).

Ridwan defined it as the reality of the classroom and what it contains (furniture and work areas). It should provide elements that make it comfortable for the learner who spends most of the school day within it. If the classroom is not comfortable, dirty walls, peeling paint, damaged old furniture, cracked ceilings, boredom and dissatisfaction arise, and it becomes difficult to imagine learners being engaged and motivated (Ridwan, 2004, p. 125).

More broadly, it includes all influences, capacities, and surrounding forces that affect learners' efforts to achieve psychological and physical stability. This environment has three dimensions: the natural environment, the social environment, and the person themselves (Al-Sayyid et al., 1970, p. 60). Al-Surur similarly described it as all conditions and resources in the school environment, including location and aesthetics (laboratories, playgrounds, green spaces, activity rooms, library, classrooms), and what the school contains (drawings, posters, desks, tables). The building's design is a key factor that directly contributes to achieving school objectives (Al-Surur, 2000, p. 104).

In summary, the physical environment is the broad setting in which learners spend most of their time. It consists of school and classroom resources, educational facilities, spaces for activities, and appropriate physical conditions (lighting, ventilation, etc.) that support the teaching–learning process.

Concept of Quality

Linguistically, *quality* implies “goodness.” In Arabic, it derives from *jawdah* (from *j-w-d*), where “good” is the opposite of “bad.” One says something “became good,” or a person “did well” by producing good speech or action (Ibn Manzur, 1984, p. 72).

In educational terms, quality refers to reaching a high level of performance; it is expressed in behavioral statements describing the learner’s performance after specific curricular experiences, and

it assumes a pre-defined standard (Faraj, 2010, p. 30). Ibrahim defined quality as a constructive process aimed at improving the final product, not as a complex or imaginary process, and it is grounded in general judgment in evaluating things (Ibrahim, 2003, p. 17).

Quality in Education

Al-Qaisi (2011) described educational quality as applying a set of educational and pedagogical specifications necessary to raise the level of the educational product (student, class, school, or educational stage) and to communicate quality to stakeholders (Al-Qaisi, 2011, p. 31). Al-Buhi defined it as a set of characteristics describing the status of inputs, processes, and outputs, and the extent to which all staff contribute to achieving objectives in the best possible manner through controlling educational inputs to obtain strong outputs (Al-Buhi, 2001, p. 376). Ben Wanissa and Ben 'Ayyu (2015) described it as a state of alignment between administrative and educational processes through unified matrices aimed at reaching "zero defects" (Ben Wanissa & Ben 'Ayyu, 2015, p. 108).

From the authors' perspective in this paper: quality in education is the application of pedagogically determined attributes, characteristics, and standards to achieve stated objectives, enabling greater control over educational processes to reach strong performance levels.

Importance and Benefits of Quality in Education:

Quality in education is reflected in the following (Shah, 2016, p. 41):

- Controlling and developing the administrative system in the educational institution.
- Raising learners' levels across domains.
- Managing complaints from learners and parents, reducing them, and proposing solutions.
- Increasing educational efficiency and setting performance standards for staff.
- Meeting the needs of learners, parents, and society, and achieving satisfaction in line with institutional systems.
- Enabling scientific analysis of problems.
- Enhancing learners' levels and strengthening parents' positive attitudes by demonstrating commitment to quality.
- Promoting closeness and integration among teaching and administrative staff through teamwork.
- Achieving local recognition and esteem for the institution.

- Developing education by diagnosing weaknesses in inputs, processes, and outputs so that evaluation becomes real improvement and effective quality control.

Factors Supporting the Implementation of Quality in Education:

Several factors facilitate the application of quality in schools (Farouq, 2014, p. 37):

- **Motivation/drive:** strengthening staff motivation regardless of role, by linking needs inside school to needs within society.
- **Teamwork:** improving effectiveness through collective performance and team spirit.
- **Change:** keeping pace with internal and external changes.
- **Training:** ensuring training is defined by learners' needs and aligned with intended goals.
- **Roles and responsibilities:** clarifying responsibilities because quality is part of every individual's duties.

The Importance of the Physical Environment in Educational Institutions:

The physical (material) environment plays a major role in group functioning such as space, shape, and colors of rooms, furniture, wall color, and similar elements. One field study indicated that productivity increases when lighting intensity is distributed homogeneously in the work area. Another study observed that when factory walls were painted light blue, female workers reported feeling cold at 20°C and continued to report cold even when temperature rose to 24°C. After the wall color was changed to light yellow and calm green, they reported feeling excessive heat. It was also observed that preventing loud noise reduced negative reactions among workers and positively affected productivity (Mansi, 2001, p. 48). The implication for educational institutions is that physical conditions can shape comfort, mood, attention, and performance.

Requirements and Conditions of the Physical Environment in Educational Institutions:

School Location:

The location should meet several conditions, including:

- Easy accessibility.
- Being in a quiet area, away from noise, pollution sources, factories, and railways.
- Availability of open air supporting internal ventilation.
- Proximity to usable water sources and ensuring access to them.

Space:

Adequate space is required to allow future expansion. It is proposed to allocate **10–15 m² per learner**, including buildings, playgrounds, and gardens; space needs increase at intermediate/secondary levels compared to primary levels.

Building Orientation:

The school should be oriented to benefit from sunlight and prevailing winds: sunlight reaches key parts of the building, and winds support ventilation and temperature regulation.

School Fence:

The fence should be standardized, with a height of approximately **1.8–2 meters**.

Classrooms: Design and Conditions Shape

and Area:

Classrooms should be rectangular. Space allocated per learner ranges from **1–1.5 m²**. Suggested suitable dimensions are **6 m width × 8 m length × 4 m height** (Abbas, 2017, pp. 37–39).

Walls:

Walls should be painted in age-appropriate colors, kept clean, contribute to better lighting, and allow for displaying learning materials and aids (Qatami & Qatami, 2002, p. 79).

Classroom Decoration:

Classroom decoration supports psychological comfort and enjoyment of learning. It should avoid excess and exaggeration. Examples include attractive educational posters, purposeful visuals, a small flower bouquet, and light curtains to block direct sunlight. Ongoing cleanliness should be maintained. Providing a classroom shelf for beneficial books, and an announcements board for instructions, exam schedules, guidance, and school hours can also be useful (Al-Hassan, 2019, p. 164).

Ventilation and Heating:

Good ventilation is necessary natural (windows) or mechanical (fans/air conditioning). Windows should ideally face each other, with lower edges slightly above seat level and upper edges near the ceiling; this reduces drafts and allows hot air to exit (Ridwan, 2004, p. 125).

Adequate Lighting:

Lighting should be sufficient, natural or artificial. For natural lighting, windows should occupy approximately **1/4 to 1/6** of the classroom floor area to provide adequate daylight. There should not be windows directly in front of or behind learners, and window glass should be clear. With artificial lighting, lamps should be distributed to prevent shadows (Fayez et al., 1999, p. 24). Inadequate lighting can cause eye strain and aversion to classroom work (CIDA, 2015, p. 16).

School Furniture:

Seats and Desks:

Seats should be designed according to learners' physical development and growth, supporting healthy sitting posture. Considerations include:

- Slight curvature of the seat from front to back to match the thigh's curve.
- Appropriate seat width.
- Rounded seat edges to avoid pressure on blood vessels and nerves.
- Backrest height matching the spinal curve, with the upper edge around the lower part of the shoulder blade.
- Desk overlap that reduces leaning forward while reading/writing.
- A desk surface inclination of about **15 degrees**.
- Seating arrangement so that most light falls on the learner's left side (Abbas, 2017, pp. 37–39; Qatami & Qatami, 2002, p. 79).

Board:

Key conditions include:

- Dark , green or black for visibility.
- Placement centered on the wall facing learners at an appropriate height.
- Distance from first row at least **1.5 meters**, and the last row no more than **7 meters** away.

- If chalk is used, it should be good quality to minimize dust (Fayez et al., 1999, p. 24). The paper also notes the modern use of whiteboards and markers to reduce health effects of chalk on teachers and learners.

The Teacher's Role in Organizing the Physical Environment:

The teacher needs to study and understand the classroom environment, since it is the most important setting for receiving knowledge. The richer the environment is in stimuli that support active learning, the more educational objectives are achieved (Mahdi, 2009, p. 154).

The physical environment is the framework in which teaching occurs. Organizing it does not necessarily require high cost or great effort, but it does require understanding learners' psychological and social needs and their work styles, alongside good planning. This ensures effective use of every corner of the classroom without cluttering it with unnecessary objects. Teachers can improve learning by organizing classroom resources, materials, and learning sources effectively (Shafshaq, 2000, p. 11).

Teachers should also:

- Maintain cleanliness and protect furniture by fostering shared responsibility and cooperation ('Adas, 1980, p. 36).
- Assign learners roles in maintenance (repairing desks, painting walls, organizing shelves), arranging furniture for easy movement and varied learning situations, and keeping instructional materials (maps, pictures, rulers, pens, notebooks) in an organized system (Ridwan, 2004, p. 24).
- Arrange seating so learners can see and hear clearly, and so movement to the board is easy for teacher and learners (Qatami & Qatami, 2002, p. 70).

The teacher also shapes the socio-emotional classroom climate: warmth, compassion, harmony, and a sense of belonging increase learners' motivation. Teachers should foster social belonging as a strong driver of learning, contributing to effective classroom management and achievement of educational goals (Shafshaq, 2000, p. 16).

Physical Conditions and Their Impact on Productive Quality:

Attention to the physical environment significantly affects teacher job satisfaction and performance. Studies indicate relationships between temperature and performance capacity, and noise

is widely recognized to affect classroom work. Working in a comfortable, quiet place supports positive feelings and improves job performance and satisfaction. In turn, this reflects positively on the quality of educational productivity and outputs, since education aims to contribute to contemporary economic and social development by preparing generations capable of adaptation and facing challenges with high competence.

Humidity in classrooms can contribute to chronic illnesses that hinder effective teaching and learning. Likewise, effective learning is not expected in classrooms with old, damaged, disorganized furniture; poor lighting; poor ventilation; or high noise and echo. Such physical elements directly influence achievement of educational goals. The paper notes that U-shaped seating is often more suitable for interactive learning (e.g., during scientific presentations) than long parallel rows. In general, providing adequate physical specifications can contribute to (Nu'man & Butiqar, 2014, p. 143):

- Facilitating teacher movement and supervision.
- Increasing learners' motivation and readiness for learning.
- Developing positive attitudes toward the institution.
- Building organizational experience useful for future contexts.
- Enabling active participation in activities requiring movement.
- Strengthening retention because learning occurs in an enjoyable climate.
- Saving teacher time for guidance, supervision, and explanation.

The paper further emphasizes that achievement is influenced by teacher quality and instructional methods; weak teaching, weak methods, and limited resources can lead to negative results. Peer relations, class size, school administration, and teacher turnover also affect achievement. Therefore, the goal of optimizing the physical environment is to facilitate procedures that achieve educational objectives beyond cognitive growth by designing the classroom in ways that help both teacher and learner.

Conclusion

A suitable physical environment in schools contributes to improving and developing school work because it influences variables related to individuals and strengthens loyalty to the school. Studies suggest that the more educators attend to physical conditions, the greater their creativity in teaching, and the stronger their loyalty to the educational institution. This fosters safety and stability in the

institution, improves internal and external conditions, and positively affects staff behavior and attitudes. Conversely, unsuitable physical conditions negatively affect the educational process and may lead to frustration and boredom, especially when routine work dominates.

Recommendations

To achieve good academic attainment in schools, it is necessary to provide a healthy environment that supports effective communication between teacher and learner. The paper recommends:

- Providing school buildings that support the teaching–learning process and contain what teachers and learners need.
- Strengthening curricula that develop learners' abilities and encourage preservation of school facilities.
- Encouraging supervisory authorities to attend to the physical aspect of schools.
- Providing modern educational tools (e.g., computers) and moving beyond purely traditional instruction toward modern communication technologies.
- Promoting sports by building school playgrounds with suitable ground surfaces.
- Providing medical support for learners, physiologically and psychologically, within the school.

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