The impact of proxemics on behavioral, affective and cognitive learning

Oana-Maria PĂSTAE[1]

Abstract: Proxemics, the study of personal space, significantly impacts learning by influencing behavioral, affective, and cognitive processes and playing a crucial role in shaping the educational process. It affects communication, classroom management, student engagement, and overall learning outcomes because standing closer to students fosters a sense of connection and approachability, making them more likely to ask questions and engage in discussions. This paper explores how physical proximity in educational settings influences student engagement, emotional connections, and knowledge retention through a review of existing literature and studies, with a focus on the behavioral, affective and cognitive effects of proxemics. Studies show that reduced teacher-student distance encourages participation and fosters stronger emotional connections.

Keywords: cognitive learning, affective learning, classroom dynamics, physical proximity

INTRODUCTION

The term *proxemics* was originally coined by the anthropologist Edward C. Hall[2], who referred to it as the study of "use of space as a specialized elaboration of culture" and further explored by Albert Mehrabian[3], a psychologist known for his work on nonverbal communication. In subsequent years, proxemics research has focused on people's use and experience of physical space during social interactions. Studies on proxemics span a variety of disciplines, including communications, social psychology, cognitive neuroscience, sociology, and robotics.

Research suggests that strategic use of physical proximity enhances communication[4] improves classroom management[5], and fosters inclusive learning environments[6]. Understanding how this spatial dynamics impacts learning allows teachers to create more effective and student-centered classrooms. Hall[7] delineates four zones of interpersonal distance that characterize Western culture: intimate (6 to 18 inches), personal (1 to 4 feet), social (4 to 12 feet), and public (greater than 12 feet).

Hall[8] emphasizes that "any attempt to observe, record, and analyze proxemic systems which are parts of modern culture, must take into account the behavioral

[1] *Conf.univ.dr. Universitatea „Constantin Brâncuși" din Târgu Jiu, oanapastae@gmail.com.

[2] Hall. (1966). *The hidden dimension*, p. 1.

[3]Mehrabian, A. (1969). *Some referents and measures of nonverbal behavior. Behavior Research Methods and Instrumentation*, 1, 203-207.

[4] Hall, *Op.cit.*

[5] Mehrabian, A. (1971). *Silent Messages*. Belmont, California: Wadsworth Publishing Company, Inc

[6] Gump, 1987.

[7] Hall, *Op.cit*. pp. 114-125.

[8] Hall, *Op.cit*, p.4.

systems on which they are based as expressed by earlier life forms". This means that the understanding of intimate, personal, social, and public spaces can vary significantly across cultures. To gain a deeper understanding of proxemics, it is essential to consider how individuals use other types of nonverbal communication such as gaze, posture, body orientation and facial expressions in combination with the interpersonal distance.

Hall[9] considers the loudness of the voice as one common source of information about the distance separating two people, the whisper being used when people are very close, and the shout is used to span great distances. He concludes that "how people are feeling toward each other at the time is a decisive factor in the distance used".

The early assessments of immediacy focused on nonverbal behaviors, including actions such as smiling, gesturing, and maintaining eye contact with the class while speaking[10]. Later, Gorham[11] introduced verbal immediacy measures by asking advanced undergraduate students to describe their "best teachers," identifying these as effective teaching behaviors. Instructor verbal immediacy also has been associated with student motivation[12], perceptions of learning[13], and both attitude toward the course and the instructor[14].

LITERATURE REVIEW

Several scholars have explored the concept of proxemics in educational settings, highlighting how personal space, teacher positioning, and spatial arrangements affect learning, communication, and student engagement.

Studies in the field of educational psychology emphasize the role of proxemics in student engagement. For example, Altman[15] found that reduced teacher-student distance encourages participation and fosters stronger emotional connections. Similarly, Andersen[16] demonstrated that teachers who move around the classroom, rather than remaining fixed at the front, create a more dynamic and interactive learning atmosphere, leading to improved knowledge retention. Moreover, McCorskey & McVetta[17] highlighted how different seating arrangements—such as circular or clustered seating—enhance peer collaboration and active learning.

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[9] Hall, *Op.cit,* p.114.
[10] Andersen, 1979.
[11] Gorham, 1988.
[12] Frymier, 1993.
[13] Menzel & Carrell, 1999; Witt, Wheeless, & Allen, 2004.
[14] Moore, Masterson, Christophel, & Shea, 1996.
[15] Altman, 1975.
[16] Anderson, 2004.
[17] McCorskey & McVetta , 1978.

Mehrabian[18] says that teachers who maintain close physical proximity to students promote greater participation and reduce behavioral disruptions. Sommer[19] also found that seating arrangements, such as U-shaped and circular layouts, encourage collaboration and active learning.

Research by Remland et al.[20] suggest that high-contact cultures, such as those in Latin America and the Middle East, benefit from smaller personal space in educational settings, while students from low-contact cultures may require more distance to feel comfortable and engaged.

Marzano[21] in his book, "Classroom Management That Works: Research-Based Strategies for Every Teacher", conducted a meta-analysis of over 100 studies on classroom management techniques and found that effective teacher-student relationships are foundational to successful classroom management. These findings suggest that teachers who are mobile and strategically position themselves in the classroom can maintain better control, prevent disruptions, and encourage active participation.

Koh & Frick[22] analyzed instructor-student interaction through survey, observation and video recording and concluded that when teachers are physically present and interact more with students, they can help build students' confidence in their abilities, which is linked to greater self-efficacy.

Fernandes et al.[23] examined the impact of seating locations on student classroom learning. According to this research, teachers' movements and positioning could serve as non-verbal cues that encourage students to stay motivated, either through increased personal interaction or by signaling interest and investment in students' learning.

O'Neill & Stephenson[24] did a research on the impact of teachers' positioning and mobility strategies on student engagement and motivation in the classroom. The idea suggests that how teachers move around the classroom and position themselves in relation to students can significantly influence how students engage with the lesson and stay motivated.

Dong & Zheng[25] utilized agent-based simulation to explore the non-linear dynamic mechanism underlying how teacher-student proximity, teacher feedback, and near-seated peer groups affect classroom engagement, thereby shedding light on the evolutionary features of classroom engagement. According to the results, the teacher's positive feedback promoted an S-shaped increase in classroom engagement, and the closer a student sat to the teacher, the greater the increase was.

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[18] Mehrabian, 1969.
[19] Sommer, 1969.
[20] Remland et al. 1995.
[21] Marzano, 2003.
[22] Koh & Frick, 2009.
[23] Fernandes et al. 2011.
[24] O'Neill & Stephenson, 2014.
[25] Dong & Zheng, 2021.

By analyzing how spatial arrangements and teacher positioning influence learning, the following section highlights the similar role of painter and museum educator in enhancing participation and fostering a sense of connection.

TEACHER, PAINTER OR MUSEUM EDUCATOR?

Teachers who move around the classroom are often perceived as more dynamic and responsive, keeping students engaged and attentive. Proximity to students can also enhance participation and collaboration. The positioning also extends to non-verbal communication, such as eye contact, body language, and gestures which make students feel more connected to the lesson and the teacher.

We can compare teacher-student distance to painter-model distance according to the American artist, Maurice Grosser, mentioned by Hall[26] who talks about "those rare opportunities to learn from the artist himself just how he "sees" his subject and uses his medium to convey this perception".

> "The portrait, he says, is distinguished from any other sort of painting by psychological nearness, which "depends directly on the actual physical interval—the distance in feet and inches between the model and the painter." Grosser sets this distance at four to eight feet. Such a spatial relation of the artist to his subject makes possible the characteristic quality of a portrait, "the peculiar sort of communication, almost a conversation, that the person who looks at the picture is able to hold with the person painted there."[27]

Rogers[28] emphasizes the importance of respecting personal space, warning against invading students' space by overcrowding or making aggressive gestures, such as placing fists on the table. The principles discussed by Rogers regarding space, movement, and teacher positioning can also be compared to museum educator positioning. Both fields emphasize the importance of how space and the physical environment affect the learning process and how audience is engaged (students or museum visitors). In museums, it's important not to overcrowd or overwhelm visitors with excessive physical closeness, as it could create discomfort and hinder engagement with the exhibit. Instead, museum educators maintain an appropriate distance, allowing visitors to engage with the space and exhibits at their own pace. Rogers[29] points out that body language can convey indecision or a lack of confidence, which can undermine a teacher's authority. Similarly, the museum educator's tone, posture, and body language are vital in conveying expertise and confidence.

When teachers are instructing, they should be positioned at the front of the room to ensure they capture the class's attention and so educators often take a central

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[26] Hall, *Op.cit*.. p. 77.
[27] Grosser, M. (1956). *The Painter's Eye*, *apud* Hall, 1966, p, 77.
[28] Rogers, B. (1998). *You Know the Fair Rule: Strategies for Positive and Effective Behaviour Management and Discipline in Schools,* Acer Press, Australia, p. 56.
[29] *Ibidem.*

position or use a designated area to guide the group. This "front" position signals to visitors that they are about to receive focused attention and that the area is important for active learning and discussion.

In both educational contexts—whether in the classroom or museum—there is a shared understanding that spatial arrangements, movement, and teacher/museum educator positioning have a significant impact on the learning experience and the level of engagement. Thoughtful consideration of proxemics in both environments enhances communication, keeps attention focused, and optimizes learning.

Spaces for formal and non-formal education can become facilitators for learning in institutions in an ever-changing educational world because the instructional environment is an important area of study and should be adequately assessed. In the following section, an analysis of the psychological and cognitive effects of proxemics will be provided.

THE PSYCHOLOGICAL AND COGNITIVE EFFECTS OF PROXEMICS

Behavioral learning and Proxemics

Behavioral learning has been defined as the commitment of the student to the skills taught in a course[30]. Close proximity between teachers and students can foster engagement and reduce disruptive behavior, while excessive distance may lead to detachment and decreased participation. Classroom layouts, such as circular seating arrangements or small group settings, encourage interaction and cooperative learning, thereby reinforcing positive behavioral outcomes.

Affective Learning and Proxemics

Affective learning has been defined as the emotional response of the student to the course, instructor, and content[31]. The physical distance between educators and students can influence emotional connections. A teacher who moves within close range of students can foster a supportive and approachable atmosphere, reducing anxiety and encouraging open communication.

Cognitive Learning and Proxemics

Cognitive learning has been defined as the comprehension, recall, and application of course content[32]. Proxemics affects cognitive engagement by influencing attention span and information retention. Studies suggest that seating arrangements impact knowledge acquisition; for instance, students seated in the front rows or within close range of the instructor tend to have higher levels of

[30] Sanders & Wiseman, 1990.
[31] Bloom, B. S. (1956). *Taxonomy of Educational objectives: Handbook I*: Cognitive domain. New York: McKay.
[32] *Ibidem*.

concentration and participation. Additionally, interactive learning spaces, such as U-shaped or clustered seating, promote discussion-based learning, enhancing critical thinking and problem-solving skills.

The teacher's positioning and classroom proxemics play a crucial role in shaping students' behavioral, affective, and cognitive learning processes.

Teacher's position

The teacher's physical position in the classroom has a direct impact on student engagement, participation, and learning outcomes. Researches suggest that instructors, who move around the classroom rather than remaining stationary at the front, create a more dynamic and interactive learning environment. Proximity to students can enhance communication, reduce feelings of hierarchy, and promote a more inclusive atmosphere. Furthermore, strategic positioning can help manage classroom behavior, ensuring students remain attentive and involved in the lesson.

Teacher positioning affects how students interact with each other. When teachers move closer to groups or individual students, it can encourage more dynamic interactions, discussions, and group work fostering a more collaborative environment. These interactions can lead to positive feedback, praise, or encouragement, which in turn boosts students' motivation and belief in their abilities.

Baringer & McCroskey[33] reviewed a significant body of research on nonverbal immediacy, particularly in classroom communication, and demonstrated that teacher nonverbal immediacy in the classroom leads to positive learning outcomes for students. The findings revealed that teachers who felt their students were more nonverbally immediate towards them showed more positive affect compared to teachers who perceived their students as less nonverbally immediate.

Hu & Wang[34] examined the association among EFL teachers' immediacy behaviors and students' WTC and engagement. The results of statistical analysis and structural equation modeling (SEM) indicated that teachers' immediacy behaviors (verbal, nonverbal) had a highly significant influence on EFL students' WTC and academic engagement.

Classroom proxemics

Monahan[35] categorized the flexibility of spaces using five qualities of flexible educational space: fluidity, convertibility, versatility, scaleability, and modifiability. Fluidity represents the design of space for flows of individuals, sight, sound, and air. Open spaces lend themselves to fluidity. Versatility indicates the property of space that allows for multiple uses.

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[33] Baringer & McCroskey, 2000.

[34] Hu & Wang, 2023.

[35] Monahan, T. (2002). "Flexible Space & Built Pedagogy: Emerging IT Embodiments." Inventio 4 (1): 1-19., p.2.

Convertibility designates the ease of adapting educational space for new uses. Educators must often convert spaces to accommodate for changes in enrollment, curriculum, or pedagogy. Scaleability describes a property of space for expansion or contraction. For expansion, schools may require annexes and additions to meet the needs of increased enrollment or curricular alterations. For contraction, as space needs decrease, schools should be able to temporarily convert buildings and rooms to other community or business purposes. Modifiability is the spatial property which invites active manipulation and appropriation. He concluded that "the concept of flexibility holds educational promise for the design of diversely enabling learning environments"[36].

Seating arrangements and organization of the classroom should be structured for the instructors' and students' needs because they have a great impact on learning and teaching process. Effective classroom design should prioritize spatial organization that fosters interaction and comfort while minimizing distractions. Some classrooms can be very anti-learning in their structure as they have dead space, poor lighting, poor airflow, hard chairs, and rigid furniture arrangements that is not easy to move around.

Wannarka & Ruhl[37] examined the contribution of classroom students' seating positions to learning gains. Results of a multi-level regression show that seating in the front row in a classroom led to higher learning gains of between 5 percent and 27 percent compared to seating in other rows that are farther away from the chalkboard.

Kariippanon & al. conducted a study demonstrating that flexible learning spaces promote increased student interaction, collaboration, and behavioral engagement in secondary schools[38].

Barra & Corona[39] analyzed the dynamics of learning processes in flexible classrooms indicating a significant improvement in student engagement and teacher adaptability through innovation in space design and flexibility in furniture.

[36] *Ibidem*, p.8.

[37] Wannarka, R., & Ruhl, K. (2008). *Seating arrangements that promote positive academic and behavioural outcomes: A review of empirical research. Support for Learning,* 23, 89-93.

[38] Kariippanon, K.E., Cliff, D.P., Lancaster, S,J,, Okely, A.D., Parrish, A.M. (2019). Flexible learning spaces facilitate interaction, collaboration and behavioural engagement in secondary school. PLoS One; 14(10):e0223607.

[39] Barra, V., Corona, F. (2024). *The impact of flexible classrooms on learning: research perspectives, Italian journal of health education, Sport and Inclusive Didactics.*

CONCLUSION

This study examined the role of proxemics in student learning, emphasizing its influence on behavioral, affective, and cognitive outcomes. The teacher's positioning within the classroom plays a crucial role in shaping student interactions with course content, peers, and the instructor.

By thoughtfully organizing spatial arrangements, educators can enhance student engagement, emotional well-being, and knowledge retention. The physical space a teacher occupies affects classroom dynamics, influences students' emotional and cognitive involvement, and fosters a supportive learning environment. Strategic use of space enables teachers to manage behavior, promote participation, accommodate diverse learners, and motivate students to succeed.

While classroom teachers cultivate long-term relationships through ongoing interactions, museum educators establish quick yet meaningful connections in dynamic settings. Despite these differences, both aim to foster warmth, responsiveness, and psychological availability.

As education continues to evolve, a deeper understanding of proxemics will be key to refining teaching strategies and enhancing student success.

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