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SEATING ARRANGEMENTS AND SOCIABILITY IN THE CLASSROOM: THE CASE OF A PRIMARY SCHOOL IN ALGERIA

Abstract: The research presented in this publication explores the development of social skills by primary school children. It aims to identify the possible links that may exist between the development of such skills and the architectural design of the classrooms, and how classroom architectural design can promote the acquisition of social skills and sociability among primary school pupils in Algeria. A mixed research method of survey and in-situ observation was used with a sample of 100 children aged 6 to 11 years, attending a primary school in the province of SKIKDA, ALGERIA. First an in-person survey conducted among the school children, to seek their responses to a number of quantitative and qualitative questions. In the second part of the research, the seating layout in classrooms was changed from the usual arrangement of rows, and the children's behavioural change in response to the changes was observed in a non-invasive way. As a result, the seating layout as a physical factor in the classroom has a major influence on children's acquisition of social skills. The seating arrangement of the classroom in a Circular or U-shaped seating layout, which has its origins in the KOUTTAB, has been found to be favourable for better interaction and creates a healthy environment for socializing, while varying the positions remains the best strategy.

Keywords: child, sociability, classroom interactions, seating layout

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Introduction

Literature Review

As educational theories and practices continue to evolve, there is growing recognition of the critical role that the physical classroom environment plays in shaping children's academic performance, social development, and behavioural patterns. Research consistently highlights that the design and organization of learning spaces influence not only how students engage cognitively but also how they interact socially with peers and teachers. Mahmoud Hamdy (2017) emphasizes that architectural forms possess an inherent capacity to shape user behaviour, creating environments that both influence and are influenced by their occupants. Schools serve as fundamental arenas for socialization, where children develop essential social-emotional skills necessary for their overall well-being, self-fulfilment, and academic success (Zukorlić & Nikolic, 2022). Moreover, the integration of education with health and well-being initiatives has been shown to bolster students' self-confidence and interpersonal relationships, contributing positively to their long-term development (Lorente, 2013). The recent COVID-19 pandemic further underscored the importance of adaptive school environments, as educators had to implement strategies to sustain supportive social settings despite unprecedented challenges (McCabe & Best, 2022). The classroom environment, often described as the "third educator," plays a pivotal role in cognitive, social, and emotional growth by providing a spatial context that can either facilitate or hinder learning and interaction (Wipple & Evans, 2022). Empirical studies reveal that seating arrangements significantly affect peer relationships and on-task behaviours, thereby impacting academic engagement and social dynamics (Kaya & Burgess, 2007; Sivanathan et al., 2024; Nan Gao et al., 2022; Hilal, 2014). Additionally, cultural and societal factors shape children's perceptions and use of space, influencing how they behave within educational settings (Tulviste et al., 2019; Sternad, 2011).

Problem

In the town of El-Harrouch, Algeria, primary schools predominantly feature uniform architectural designs characterized by traditional classroom layouts. These classrooms typically consist of old-fashioned desks arranged in straight rows, with two students per table, all facing the teacher who occupies a position of authority at the front. This conventional spatial arrangement imposes strict limitations on students' freedom of movement and interaction, thereby restricting opportunities for social engagement and collaborative learning. Such a rigid environment may inadvertently stifle children's social development and diminish the quality of their overall learning experience. Despite widespread acknowledgment of the influence of physical environments on educational outcomes, there has been limited investigation into how relatively simple modifications—such as altering seating arrangements—could enhance social interaction and academic performance within these schools. Addressing this gap is crucial for developing practical, cost-effective strategies that can be implemented without extensive structural changes.

Research Questions

To address the identified problem, this study aims to explore several fundamental questions:

- Does the mere presence of individuals sharing a physical space naturally foster sociability and meaningful social interaction?
- To what extent can the architectural design of a classroom actively encourage or inhibit sociability among students?
- Is the classroom environment primarily designed as a transient space focused on information delivery, or can it function as a genuine meeting place that nurtures social connection?
- Can intentional changes in the classroom's spatial configuration influence the behaviours and interactions of its users?
- Specifically, how do small-scale modifications to seating arrangements impact children's social behaviour and promote a more sociable classroom atmosphere?

Study's Objectives

The primary objective of this research is to systematically examine the effects of implementing a new classroom seating arrangement within a typical urban primary school in El-Harrouch, located in the Skikda province of Algeria. By concentrating on seating layout—a factor that can be modified with minimal resources and without structural renovation—this study seeks to uncover how spatial reconfiguration can influence children's social development and learning experiences. Through this investigation, the research aims to:

- Elucidate the relationship between classroom spatial design and students' social interactions and behaviours.
- Identify seating configurations that foster greater peer engagement, collaboration, and positive social dynamics.
- Develop actionable recommendations for educators, school administrators, and space planners to optimize classroom environments in ways that support both social and academic outcomes.
- Ultimately, this study aspires to contribute practical insights that can inform low-cost, scalable interventions to enhance the educational environment and promote holistic child development in similar contexts.

In the next sections, we'll try to answer these questions through applied research at a primary school in Skikda, Algeria, and we will focus our research only the pupils' seating layout, as this is the only factor that can be changed at this stage.

Theoretical framework

Classroom seating arrangements have evolved to foster collaboration, facilitating face-to-face interaction and a sense of community. Configurations like clusters, U-shapes, and flexible seating encourage communication and peer support, while traditional rows often inhibit interaction and engagement (Wannarka & Ruhl, 2008; Gremmen et al., 2018; Pham et al., 2025).

Collaborative learning is rooted in educational theories highlighting social interaction's role in cognitive development, notably Vygotsky's Social Development Theory. Vygotsky emphasized that learning is fundamentally social, shaped by cultural tools and social interaction that develop basic mental functions into higher cognitive abilities (Vygotsky, 1978).

In Algeria, circular seating has historical roots in Elkouttab—Quranic schools where children sit in a circle on the floor with their teacher. Modern classrooms preserve these principles with contemporary furniture, promoting communal learning.

Fig. 1. A Quran learning lesson in Elkouttab. Source: https://iqna.ir/fr/news

Flexible, movable furniture supports collaboration by allowing students to choose seating, enhancing interaction and group dynamics (Rands & Gansemer-Topf, 2017). Face-to-face arrangements like clusters or circles boost participation and engagement (Cortazzi & Jin, 1996).

The Harkness method, organizing students in circles, improves communication, critical thinking, and self-expression (Ezzat & Salah, 2022). Similarly, Socratic Seminars encourage dialogue and deeper textual analysis (Roger & Jensen Jr., 2015).

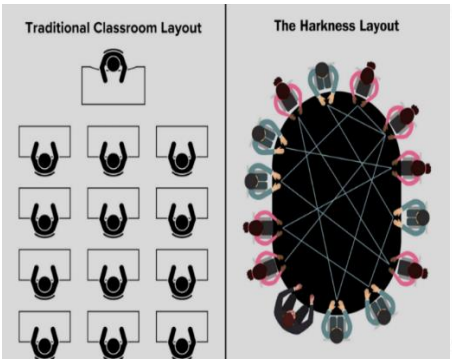

Fig. 2. The traditional and Harkness layouts
Source: https://standard.asl.org

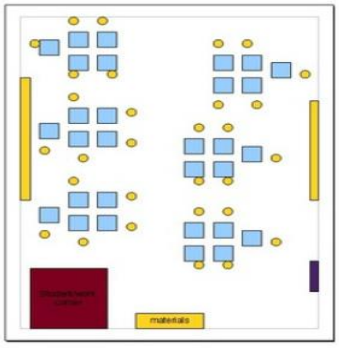

Fig. 3. Clustered seating arrangements
Source: educasciences.org, 2025

U-shaped and circular layouts enhance empathy, trust, and communication, unlike traditional rows, which limit interaction and participation (Falout, 2014). Cluster seating also promotes social interaction and student-cantered learning, boosting engagement and outcomes (Sivanathan et al., 2024).

Research shows seating positions affect peer learning: central placement of high-performing students benefits lower performers but may disrupt mid-level students, highlighting the importance of strategic seating (Wang & Zhang, 2024).

Classroom design also influences students' psychological well-being and social development, integrating spiritual, mental, and behavioural growth (Ezzat & Salah, 2022). Studies confirm that innovative classroom designs significantly improve collaborative engagement compared to traditional layouts (Zimmermann et al., 2018).

Future Algerian classrooms should combine circular seating with design elements like natural light, vegetation, quiet zones, and balanced colours to create calm, supportive learning environments that nurture both academic and emotional growth (Ralph et al., 2021).

Methods

To better understand the interaction between the child and the physical environment of the classroom, we opted for Case Study Approach, combining both quantitative and qualitative approaches, which was organized in three phases: the pilot survey, the classroom seating layout experiment and the final survey as below, and the statistical tests were applied (Correlation test) beside the analysis of descriptive indicators.

The questionnaire was especially developed for this study with the schools' psychologist collaboration, and it was inspired from the "Scale for Measuring Classroom Social Climate in Elementary Schools" model, (The classroom social climate and its evaluation in middle school, 2005) by Halim Bennacer, in which the same evaluation factors were used as in the direct observation (Bennacer, 2005).

The study of Bennacer addresses the social climate of the classroom as a variable influencing students' academic performance and behaviour in middle school. It aims to develop and validate a shortened version of the scale for assessing this climate, based on the perception of class members, while taking into account the physical-environmental characteristics of the school. The results confirm the psychometric validity of this tool, while showing that the social climate influences both pedagogical performance and school assessments, according to its various dimensions (Bennacer, 2005).

Field investigation

The case study is a large primary school located in an affluent neighbourhood in the town of Elharrouch in the province of Skikda in Northeastern Algeria. The town has a total of 19 schools, 150 classrooms and 6068 pupils. According to statistics from the provincial Education Directorate for the year 2021, the classroom occupancy rate is 45% on average.

The choice of this sample is based on criteria such as school size, geographical location, catchment area, year of opening the of school, social class homogeneity of the majority of pupils.

Tahar Boubelli school is a local primary school, with a total of 580 pupils, 295 girls and 285 boys, distributed over the five primary school levels. The school covers an area of 0,40

klm² neighbourhood with a mix of individual and collective housing, approximatively 800 families, averaging 5 person/family.

Fig. 4. Location of Tahar Boubelli primary school. Source: Authors, 2024

Fig. 5. A general view of classrooms block. Source: Authors

Sample of 100 pupils, 51 girls and 49 boys, distributed over five classes was chosen, averaging 20 pupils per class.

Table 1. Pupil's numbers by sex and year of school (sample)

Classe	Boys	Girls	Total
Year 1	09	10	19
Year 2	10	08	18
Year 3	10	12	22
Year 4	10	11	21
Year 5	10	10	20
Total	**49**	**51**	**100**

Source: Authors, 2024

Pilot survey

The first phase consisted of making contact with the pupils and evaluating the physical environment within the classroom, in particular the seating layout (traditional position) and the layout of the classroom by the children themselves. The aim was to find out the children's level of satisfaction with the classroom layout.

Firstly, the questionnaire was distributed to the children before the classroom observation. This was done under the supervision of the researcher and teachers. The participants were briefed to ensure the questions were properly digested and that the message was properly received. The responses were collected from the children the following day. A second similar questionnaire was administered after the seating layout changes. Five questions were asked as table below shows.

Table 2. Multiple-choices questions for the pilot survey

Questions	**Possible answers**		
A sample of 100 children surveyed	Not at all	A little	Too much
Do you like your classroom?			
Do you like to sit in a traditional row?			
Do you like sitting in a circle?			
Do you like sitting in a cluster?			
Do you like working in a group?			

Source: Authors, 2024.

In our case direct questions concerning the pupil's classroom seating arrangement preferences, which is the independent variable, make up the majority of a questionnaire.

Classroom observation

Seeking the subjective response of children relating to the seating arrangements and group working was deemed not enough to analyse their learning experience. For this reason, it was necessary to use direct observation of children's behaviour and their interactions with the learning environment, under different seating arrangement in classrooms in order to understand their behaviour. To this end, the investigation focussed on assessing sociability in the classroom, through a series of on-site experiments, using seating layouts being used with the children, and having them observed during learning sessions.

The on-site experiments consisted of making changes to the classroom seating layout (a physical-spatial factor), from the everyday traditional frontal position (front-facing rows) to other layouts including circular or U shape and clusters, over a three-months period, with each layout lasting for a month. The observation of children during these experiments were carried out by the principal investigator, helped by the classroom teachers who were briefed to this end. The observation covered children's social skills in the classroom, interactions and communication skills with peers and teachers and finally the children's emotional maturity. The observation covered daily sessions from 8:00 to 11:15 and from

13:00 to 15:00, for five days a week during the observation period and different lessons of maths, languages and others.

Based on the information obtained from the theoretical framework, the classroom reorganization was carried out with the help of the teachers and the children, who appreciated the contribution they made to the changes and the reorganization of the classrooms concerned.

It is so complicated to measure sociability in the classroom, which is an unmeasurable phenomenon. To make it measurable, we tried to create a model for evaluating and measuring the social climate in the classroom by evaluating children's social behaviour, a series of scores were attributed against the behavioural indicators in the model shown in Table 3 below.

Table 3. The indicators used during the observation

Indicator	**Frequency of occurrence**			
	Not at all	Enough	More than enough	Too much
How often do they raise their hands?				
Do they listen?				
How often do they talk to each other?				
How often do they engage in exchanges with each other?				
How often do they engage in conflict?				
Do they understand the instructions?				

Source: Authors, 2024

Final survey (the same questions as in Table 2 above)

In the third phase, the questionnaire was redistributed to the same sample for the second time, in order to see their new responses after the experiment.

The main findings

The pilot survey

Out of 100 students, only 67 returned questionnaires for a variety of reasons. The survey results showed that 50% of the children in the returned sample don't like their class at all. Yet, 43% of the children stated that they like sitting in the traditional sitting position. On the other hand, 48 % of the participants expressed a dislike for the circular seating layout, almost 60% of them refused to sit in the cluster configurations and 85% refused group work altogether.

Table 4. Pilot survey results

Questions	Recorded answers		
A sample of 100 children surveyed only 67 returned	Not at all	A little	Too much
Do you like your classroom?	34	15	18
Do you like to sit in a traditional row?	16	22	29
Do you like sitting in a circle?	32	31	4
Do you like sitting in a cluster?	40	21	6
Do you like working in a group?	**57**	**7**	**3**

Source: Authors, 2024

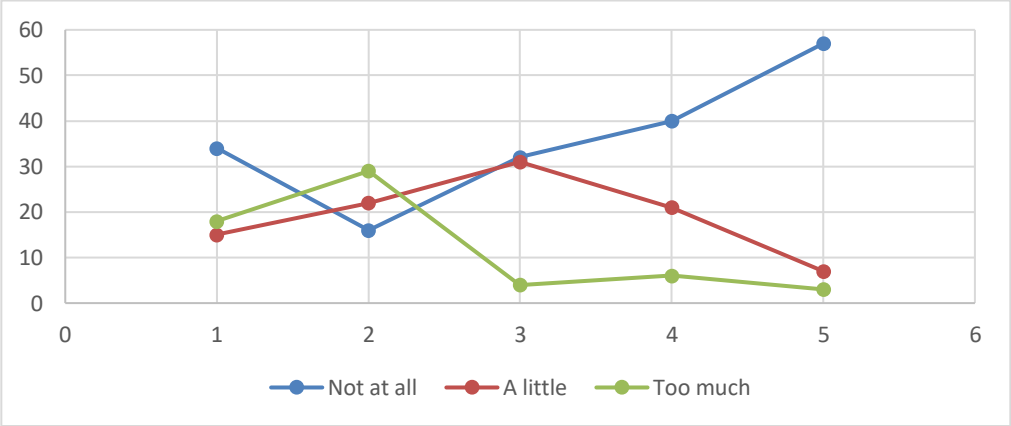

Fig. 6. Responses to questions of the pilot survey. Source: Authors, 2024

Data collected through observation

In the beginning, the children were surprised, especially those in the first cycle (1st, 2nd and 3rd year). They asked why we had changed the layout and whether it had anything to do with a new activity, because they hadn't had this experience before, with the exception of the pupils who had attended the Qu'ranic school (ELKOUTTAB), as they were familiar with this position.

Children in the 2nd cycle (4th and 5th year) have already experienced this new way of arranging the classroom during the end-of-year ceremony, so they have directly linked the changes to this event, and students who have attended Qu'ranic school as well.

After an explanation from the teacher, calm returned to the classroom and the lesson began. After a short time, the pupils were able to enter into the classroom atmosphere in a normal way and began to communicate better with each other and with the teacher.

Class participation became more noticeable as the days went by, social interaction between students and with the teacher became more considerable, the students quickly adapted and created a new social climate within the class.

Traditional seating layout - Results are calculated as an average per class

Table 5. Observation results for the traditional row seating arrangement

Indicators for an overall view of the class	**Observed conditions in the classroom**			
traditional row	Never	Enough	More than enough	Too much
How often do they raise their hands?		•		
Do they listen?			•	
How often do they talk to each other?	•			
How often do they engage in exchanges with each other?		•		
How often do they engage in conflict?	•			
Do they understand the instructions ?		•		

Source: Authors, 2024

The participation rate is more remarkable in circles and islands than in traditional positions, as are social interactions (exchange and conflict). The same goes for interactions between students, in discussion and conflict.

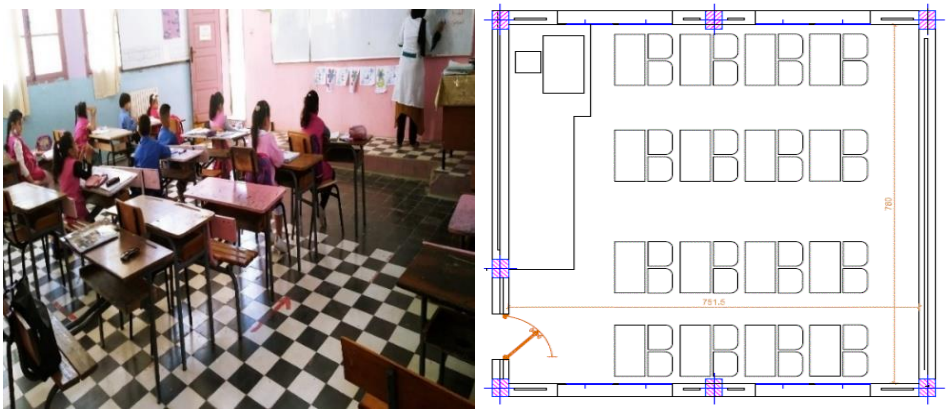

Fig. 7. Classroom with the Traditional row seating arrangement. Source: Authors

Circular seating layout- Results are calculated as an average per class

Table 6. Observation results for the U shape seating arrangement

Indicators for an overall view of the class	**Observed conditions in the classroom**			
Sitting in U shape	Never	Enough	More than enough	Too much
How often do they raise their hands?			•	
Do they listen?			•	
How often do they talk to each other?				•
How often do they engage in exchanges with each other?				•
How often do they engage in conflict?	•			
Do they understand the instructions ?			•	

Source: Authors, 2024

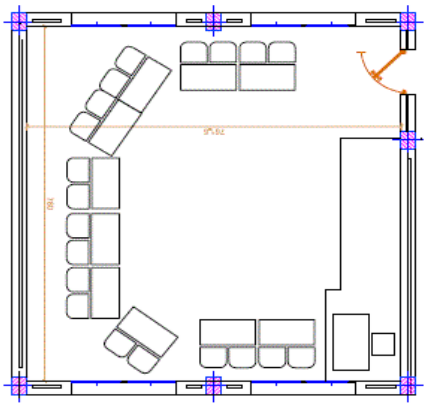

Fig. 8. Observed classroom with a U-shape layout. Source: Authors

Cluster seating layout - Results are calculated as an average per class

Table 7. Observation results for the cluster seating arrangement

Indicators for an overall view of the class	**Observed conditions in the classroom**			
Sitting in clusters	Never	Enough	More than enough	Too much
How often do they raise their hands?				•
Do they listen?				•
How often do they talk to each other?				•
How often do they engage in exchanges with each other?				•
How often do they engage in conflict?			•	
Do they understand the instructions ?				•

Source: Authors, 2024

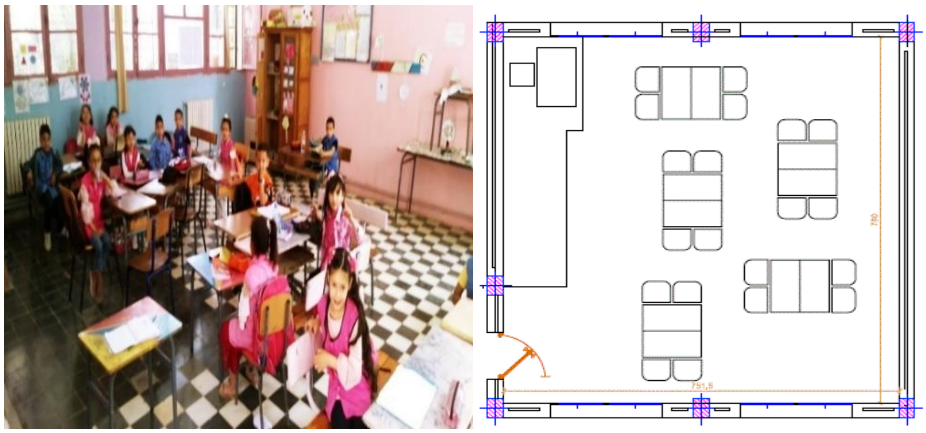

Fig. 9. Observed classroom with a cluster layout. Source: Authors

The survey results

This time, the questionnaires were redistributed to the same 67 children who made a return for the pre-observation survey. The individual scores were aggregated for the entire sample. The results are shown below.

Table 8. Final survey results

Questions	**Recorded answers**		
67 children surveyed	Not at all	A little	Too much
Do you like your classroom?	2	5	60
Do you like to sit in a traditional row?	48	12	7
Do you like sitting in a circle?	2	15	50
Do you like sitting in a cluster?	4	21	42
Do you like working in a group?	5	6	56

Source: Authors, 2024

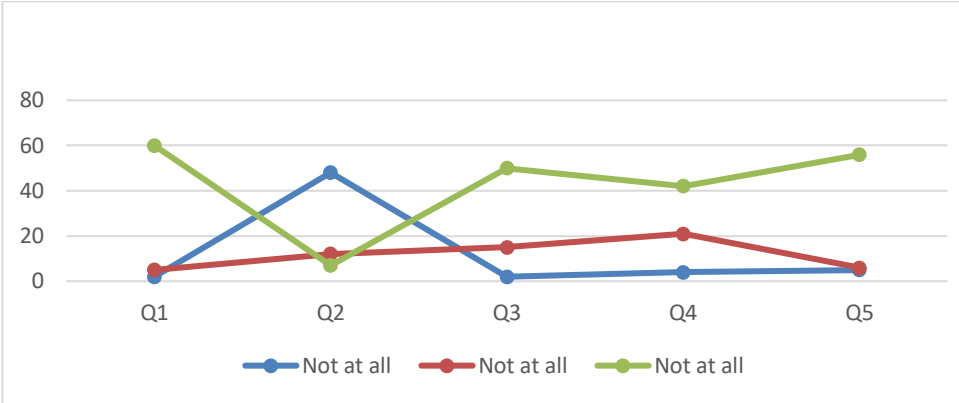

Fig. 10. Responses to questions of the final survey. Source: Authors, 2024

1 - 89% of the students in the surveyed sample answered that they like their classroom a lot.
2 - 71% of the students in the surveyed sample answered that they don't like sitting in the traditional sitting position at all.
3 - 74 % of students responded that they like the circle sitting position a lot.
4 - 62 % like to sit in clusters.
5 - 83% prefer to work in groups with their peers.

Statistical Analysis 'Pearson correlation coefficient'

The objective of this teste was to find the relation between the child's seating arrangement (traditional, U-shaped, small group) and specific classroom behavioural indicators of social interactions such as the frequency of hand raises, participation, listening, speaking and exchanging, conflicts, and comprehension of the instructions.

Seating arrangements were encoded and classified as (1 = Traditional, 2 = U, 3 = Small group). Behavioural indicators were given values on a three to four points rating scale (0-3) based on the intensity for the specified behaviour or interaction indicator.

To examine behavioural correlates of sitting posture, Pearson product moment correlation coefficients were calculated, as the data can be considered a relative continuum, and a linear relationship between both variables can be established.

Findings of correlation analysis: (Testes made with SPSS 21)

The findings confirm strong and statistically significant positive correlations for improved sitting posture transitioning from traditional to small groups and significant increases in higher degrees of:

- Hand raising and class participation (r=1.00)
- Listening (r≈0.87)
- Speaking and interaction (r≈0.65 - 0.87)
- Comprehension (r=1.00)
- Moreover, the index of conflict showed significant increase in small group settings (r≈0.87)

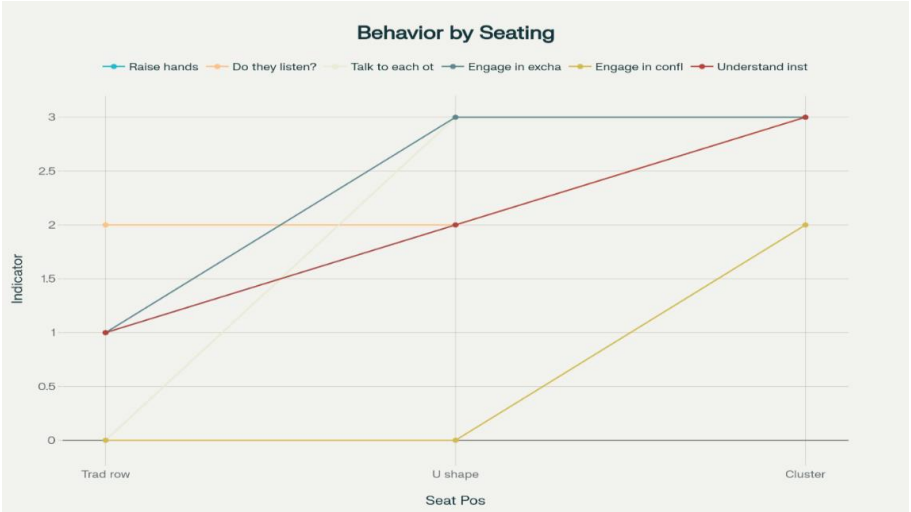

Fig 11. Changes in behaviour indicators across different seating positions (Traditional row, U shape, Cluster seating). Source: Authors

Noteworthy insights drawn from the graphic:

- Transitioning from a traditional classroom model to small groups shows improvement in engagement metrics (hand raising, talking, interaction, and comprehension) for almost all of the positive indicators.
- The indicator for conflict only rises sharply in the case of clusters interactions.
- As "listening" and "understanding" improve with more interactive seating positions, performance also improves with more active engagement.

This graphic supports the data results in that motivating classroom seating arrangements, either U-shape or clusters, foster constructive behaviour and active participation with the caveat that conflicts tend to rise in group settings.

Results Analysis and Discussion

Data Analysis

Changes in Classroom Dislike and Post-Experiment Classroom Preferences

At first, half of the children disliked their classroom setting. That number improved to 11% after the intervention, with 89% indicating they liked their classroom.

In the pilot survey, 43% preferred the traditional row seating; lower proportions preferred circle or cluster arrangements. Post-experiment, 71% preferred traditional row seating, while 74% preferred circle seating, and 62% preferred clusters.

Prior to the experiment, 85% of pupils refused to work in groups; post-experiment, 83% preferred working in groups.

Observations of pupils Reactions and Behaviours

Lower grade students (1-3) were surprised by the changes in seating during the first class and enjoyed having a role in the decision. KOUTTAB pupils were already accustomed to the new seating arrangements.

Upper grade students (4-5) had some prior exposure to the new arrangements and adjusted much faster.

Generally, students became more adequate after guidance from teachers and communicated more with their peers and adults.

Over time, greater participation and social interaction was noted, especially in circle and cluster seating arrangements relative to traditional rows.

In clusters of chairs (group seating), the incidence of disputes increased because students were competing for the position of leader.

Engagement was most significant in circle seating arrangements, and, to a lesser extent, in cluster seating and rows.

Row seating was most effective for focus demanding subjects such as math and language classes. Circle seating was optimal for classes where discussion was pertinent, including language and civic education, while cluster seating supported complex problem-solving and peer teaching.

Physical features of the classroom set limitations: traditional classrooms had fixed physical structures, oversized stationary furniture, and high density (32 students on average), creating inflexible rigid classrooms.

Interpretation and Thematic Analysis

Developmental Changes in Preferences Related to Seating Arrangements

The attachment towards a place increases over time especially when the person feels engaged and comfortable in the space, which in this case was the classroom (Bergin & Bergin, 2009).

Initial opposition towards new seating patterns (low desire for non-traditional seating) stemmed from a narrow worldview as explained by Piaget's theory on the need for firsthand experiences for familiarity (Rabindran, 2020; Brück, 2022; Pakpahan & Saragih, 2022). It was about children preferring what they were already used to.

Post practical exposure, students became more open to new arrangements as they became aware of social interactions provided by those setups.

Group Dynamics Development

The clear movement from group work being disliked to preferred illustrates developmental changes in social readiness as well as confidence in collaboration. Social interaction was influenced by seating arrangements: clusters fostered collaboration but also heightened leadership competition, which indicates healthy social development (Bennacer, 2005; Australian Early Development Census, 2021; Ivanova & Vinogradova, 2019).

Circle seating improved equal opportunity as well as openness enhancing dialogue and reducing shyness as a product of community. The seating also balanced interaction by placing the teacher either in the middle or at the open end of the U-shape, thus centrally of the class, which balanced engagement and exchange.

Concentration demanding subjects still benefitted from whole class traditional rows as deep individual focused work was coupled with strong teacher supervision.

It appears that optimizing the teaching and fostering of social skills happens through adaptation to specific activities by alternating seating structures.

Changes by Grade Level and Modification

Younger children were actively engaged in processes that required collaboration, which surprised them initially alongside their limited exposure to such classroom structures, supporting the notion that active involvement leads to adaptive changes.

Prior exposure facilitated adjustment for older children, reinforcing the idea put forth by Piaget concerning the importance previous experiences in understanding new structures (Pakpahan & Saragih, 2022).

When actively engaged, children showed they can adapt to and change their surroundings. This supports architectural designs intended for children to enhance identity development and well-being (Million et al., 2024).

Constraints and Practical Challenges

Implementation is hampered by pedagogical benefits that are inflexible and overcrowded classroom environments with limits on reconfiguration.

Most classroom furniture is static, child-sized, immovable, and thus hinders efficient layout adaptation. Flexibility would increase if mobile, child-sized, wheeled furniture were provided.

Fig. 12. Very old furniture and not flexible. Source: Authors

An increased number of students lowers the amount of space available for each child, impacting comfort and level of interaction. Overcrowding, the Algerian classroom averages 32 students, with a TOL=32 (Ministry of National Education 2021). That is 1.40 m²/student, an air volume of 4 to 5 m³/student, and a glazed area opening from 10 to 15% of the floor area (Official Journal No. 33 of May 8, 2005, p. 20). These systemic factors create barriers to many different seating arrangements despite their potential for enriching the learning experience.

Interpreting the Pearson correlation coefficient results

These coefficients show that changing classroom seating arrangements towards more dynamic arrangements (U-shaped and small groups) clearly enhances social interaction and

class participation, and facilitates understanding and adherence to instructions, but may be accompanied by a slight increase in conflict.

Conclusion

In conclusion, this study highlights how flexible classroom layouts can really boost social interactions and keep students engaged. By using different seating arrangements—like circles, U-shapes, and clusters—students are encouraged to collaborate, communicate, and build important social skills, especially those who might struggle with social interactions. Unfortunately, the traditional rigid classroom setups commonly found in Algerian schools limit these opportunities, often turning the learning experience into a passive one instead of promoting active engagement both socially and academically. To make a real difference, introducing movable furniture and varying seating arrangements throughout the week can create a more adaptable and socially enriching environment that meets the diverse needs of students. Future classroom designs in Algeria should also take into account elements like natural light, greenery, and quiet areas to enhance students' mental well-being alongside their academic progress. However, it's important to note that this study is based on just one school context, which means more research across different educational settings is needed to truly understand the broader effects of flexible classroom designs on pupils' development.

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References

Australian Early Development Census (2021). *Findings from the AEDC*. Australian Early Development Census. https://www.aedc.gov.au/early-childhood/findings-from-the-aedc

Aziz, N. F., & Said, I. (2012). The Trends and Influential Factors of Children's Use of Outdoor Environments: A Review. *Procedia - Social and Behavioral Sciences, 38*(38), 204–212. https://doi.org/10.1016/j.sbspro.2012.03.341

Bennacer, H. (2005). Le climat social de la classe et son évaluation au collège. *L'Orientation Scolaire et Professionnelle, 40*(34/4), 461–478. https://doi.org/10.4000/osp.409

Bergin, C., & Bergin, D. (2009). Attachment in the Classroom. *Educational Psychology Review, 21*(2), 141–170. https://doi.org/10.1007/s10648-009-9104-0

Bosacki, S. (2022). *Education Research on Developmental Social Cognition in Children and Adolescence*. Oxford Research Encyclopedia of Education. https://oxfordre.com/education/view/10.1093/acrefore/9780190264093.001.0001/acrefore-9780190264093-e-169

Ezzat Hassan, A., & Salah Noaman, S. (2022). The Role of Classrooms Interior Design in Creating a Creativity Supportive Environment in the Shade of the New Education Philosophy Introduction. *Journal of Architecture, Arts and Humanistic Sciences, 7*(31), 689-713. https://www.researchgate.net/publication/361400149

Falout, J. (2014). Circular seating arrangements: Approaching the social crux in language classrooms. *Studies in Second Language Learning and Teaching, 2*(2), 275–300. https://doi.org/10.14746/ssllt.2014.4.2.6

Feng, S., Tan, Y., Wang, Z., & Zhang, Q. (2024). Spatial Structure of Peer Networks and Academic Achievement Based on a Random Control Trial Experiment. *China & World Economy, 32*(3), 67–97. https://doi.org/10.1111/cwe.12532

Ferguson, K. T., Cassells, R. C., MacAllister, J. W., & Evans, G. W. (2013). The physical environment and child development: An international review. *International Journal of Psychology, 48*(4), 437–468. https://doi.org/10.1080/00207594.2013.804190

Gao, N., Rahaman, M. S., Shao, W., Ji, K., & Salim, F. D. (2022). Individual and Group-wise Classroom Seating Experience. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 6*(3), 1–23. https://doi.org/10.1145/3550335

Gremmen, M. C., van den Berg, Y., Steglich, C., Veenstra, R., & Dijkstra, J. K. (2018) The importance of near-seated peers for elementary students' academic engagement and achievement. *Journal of Applied Developmental Psychology, 57*, 42-52. https://doi.org/10.1016/j.appdev.2018.04.004

Hausfather, S. J. (1996). Vygotsky and schooling: Creating a social context for learning. *Action in Teacher Education, 18*(2), 1–10. https://doi.org/10.1080/01626620.1996.10462828

Hilal, Ü. S. (2015). *Effects of different seating arrangements on learning experience: the case of medium sized lecture settings in Bilkent University*. Bilkent University.

Ivanova, N., & Vinogradova, M. (2019). Correlation between leadership and sociometric status of a pre-school child in a group of peers. *Proceedings of the 3rd International Conference on Social, Economic, and Academic Leadership* (ICSEAL 2019), 3(4). https://doi.org/10.2991/icseal-19.2019.47

Jensen, R. (2015). *Running Head: Socratic Method in Critical Thinking Skills*. Faculty of Grace University.

Kaya, N., & Burgess, B. (2007). Territoriality. *Environment & Behavior, 39*(6), 859–876. https://doi.org/10.1177/0013916506298798

Lakha, S. (2023). *Understanding Classroom Layout and Design*. EducaSciences. https://www.educasciences.org/learning-environment-design-classroom-layout-and-design

Mahmoud, H.-T. H. (2017). Interior Architectural Elements that Affect Human Psychology and Behavior. *The Academic Research Community Publication, 1*(1), Article 10. https://doi.org/10.21625/archive.v1i1.112

McCabe, E. M., & Best, N. C. (2022). The Significance of Social Development Support in Schools: The Critical Role of School Nurses. *NASN School Nurse, 38*(2), Article 1942602X2211282. https://doi.org/10.1177/1942602x221128227

Million, A., Schamun, K., & Fegter, S. (2024). Understanding Well-Being Through Children's Eyes: Lessons for Shaping the Built Environment. *Urban Planning, 9*(9), Article 8618. https://doi.org/10.17645/up.8618

Monsalve Lorente, L. (2013). La educación para la salud en la escuela como intervención social / Health Education at School as Social Intervention. *Revista Internacional de Ciencias Sociales, 2*(1). https://doi.org/10.37467/gka-revsocial.v2.1225

Pakpahan, F. H., & Saragih, M. (2022). Theory of Cognitive Development by Jean Piaget. *Journal of Applied Linguistics, 2*(2), 55–60. https://doi.org/10.52622/joal.v2i2.79

Pham, B., Le, T., & Duong, H. (2025). Participation Level in Different Seating Zones and Experiences with Row-and-column Arrangement in EFL Speaking Class. *EIKI Journal of Effective Teaching Methods, 3*(1). https://doi.org/10.59652/jetm.v3i1.493

Rabindran, & Madanagopal, D. (2020). Piaget's theory and stages of cognitive development - an overview. *Scholars Journal of Applied Medical Sciences, 8*(9), 2152–2157. https://doi.org/10.36347/sjams.2020.v08i09.034

Ralph, M., Schneider, B., Benson, D. R., Ward, D., & Vartia, A. (2022). Student Enrollment Decisions and Academic Success: Evaluating the Impact of Classroom Space Design. *Learning Environments Research, 25*(2), 523–547. https://eric.ed.gov/?id=EJ1338357

Rands, M., & Gansemer-Topf, A. (2017). The Room Itself Is Active: How Classroom Design Impacts Student Engagement. *Journal of Learning Spaces, 6*(1), 26–33.

Reyero, D., & Gil Cantero, F. (2019). La educación que limita es la que libera. *Revista Española de Pedagogía, 77*(273). https://doi.org/10.22550/rep77-2-2019-01

Sivanathan, I., Thamburaj, K. P., Ponniah, K., Arumugum, L., & Rajamani, R. (2024). Transforming classroom dynamics: A comparative analysis of U-style, V-style, and circle innovative teaching techniques. *International Journal of Advanced and Applied Sciences, 11*(10), 105–113. https://doi.org/10.21833/ijaas.2024.10.012

Sternad, D. (2011). Cultural influences on the adaptation process. In D. Sternad (Ed.), *Strategic Adaptation* (pp. 139-158). Springer, Vienna. https://doi.org/10.1007/978-3-7091-0455-2_6

Tulviste, T., Best, D.L., & Gibbons, J.L. (2019). Children's Culturally Enriched Social Development. In Tulviste, T., Best, D., Gibbons, J. (Eds.), *Children's Social Worlds in Cultural Context* (pp. 233-239). Springer, Cham. https://doi.org/10.1007/978-3-030-27033-9_17

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Wannarka, R., & Ruhl, K. (2008). Seating arrangements that promote positive academic and behavioural outcomes: a review of empirical research. *Support for Learning, 23*(2), 89–93. https://doi.org/10.1111/j.1467-9604.2008.00375.x

Wardani, H. K. (2022). Pemikiran Teori Kognitif Piaget di Sekolah Dasar. *Khazanah Pendidikan, 16*(1), 7–7. https://doi.org/10.30595/jkp.v16i1.12251

Whipple, S. S., & Evans, G. W. (2022). The physical environment and social development. In P. K. Smith & C. H. Hart (Eds.), *The Wiley-Blackwell handbook of childhood social development* (pp. 171–188). Wiley Blackwell. https://doi.org/10.1002/9781119679028.ch9

Zimmermann, P., Stallings, L., Pierce, R., & Largent, D. (2018). Classroom Interaction Redefined: Multidisciplinary Perspectives on Moving Beyond Traditional Classroom Spaces to Promote Student Engagement. *Journal of Learning Spaces, 7*(1), 45-61.

Zukorlić, M. S., & Nikolić, I. A. (2022). School as an educational context for the development of students' social competence. *Sociološki Pregled, 56*(3), 954–977. https://doi.org/10.5937/socpreg56-39517