Physical Learning Environment and Learning Functioning among Students from the Point of View of Teachers in the Arab Education System in Israel

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Abstract This study examines the influence of the physical learning environment on students' performance, as perceived by teachers in elementary schools in the Arab education system in Israel, which function within a reality of exclusion and ongoing discrimination. Studies point to the importance of the design of the physical learning environment and its significant influence on students' functioning in several areas: emotional, cognitive, social, and aesthetic. The physical learning environment has a significant influence, both on the feelings of students and teachers, and on the way students function in various fields. Teachers can influence a variety of components in the school's physical learning environment to promote meaningful learning and create an environment that empowers learning, independent thinking, creativity, and self-learning and encourages personal growth and social involvement. This study is a correlational study administered among 200 Arab teachers from elementary schools. Teachers answered a questionnaire examining the relationship between the physical learning environment and the learner's functioning. In order to test the hypotheses, we used the SSPS statistical analysis program. The main results indicate that the physical learning environment affects the students' performance in the following areas: emotional, cognitive, and emotional. Details of findings relating to teachers' personality variables will be reported in the article. Implications and directions for future research are discussed.

Keywords: physical learning environment, learning functions, Arab students, teachers

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1. Introduction

The Arab educational system in Israel operates under conditions of inequality in terms of resources and in physical and communication technologies infrastructure [1,2], inspection and control of pedagogical contents taught in schools, and the choice of the teachers that the educational system employs [3,4,5]. In addition, the state has withheld official recognition of the historical narrative and the cultural attributes of the Palestinian Arab minority [4,5]. Furthermore, it has excluded Palestinian-Arab educational leaders from circles in which educational decisions and policies are made. Thus, principals and teachers from the Arab educational system in Israel are unable to discuss issues related to the Palestinian national narrative and are instructed to keep this narrative out of the educational activities in their schools [6]. This difficult reality is reflected in the gap of one academic year in the international tests between Arab and Jewish students [7].

One of the main aims of the 21st century School is the design of a physical learning environment facilitating learning and the cognitive, social, emotional and environmental (esthetic) development of the students. The physical learning environment plays an important role in the development of the students’ capabilities and inclinations and in shaping their personality [8]. The physical learning environment influences upon the functioning of the school, upon the work of the teacher in class and upon the cognitive, social, and emotional development of the students [9,10,11]. At the same time, giving expression to the social and cultural values of the students in the design of the learning environment is of utmost importance [12,13]: an inclusive, challenging, attractive learning environment in line with the identity and the culture of the students enhances their sense of connection and of belonging to the environment, to the processes and to the contents transmitted in it.

The reality has changed dramatically in recent decades, education has become very significant in the milestones of the life of every human society, especially a national ethnic minority like the Arab-Palestinian minority in Israel, allowing it to improve its human capital and realize its potential. But the learning spaces in Arab schools have hardly changed and have remained, for the most part, as they have been for many decades. The learning environment in the Arab school is almost always
characterized as follows: the teacher faces the class and the students sit at desks; the main teaching tools are a board, a text book, a notebook and writing implements; and the dialogue between the teacher and the students is conducted in a format of: Contact-Response-Feedback [14,15]. This description reflects the traditional learning environment that has been widely criticized as an approach that limits knowledge and learning processes.

In recent decades, innovative learning environments have been developed, designed to enable different interactions and lead to deeper and more meaningful learning. In addition to the desirable characteristics of the traditional learning environment (such as a supportive climate, respectful attitude between all the persons in school), the innovative learning environment includes diverse information and communication technologies, things that missing in Arab schools.

2. Physical Learning Environment

A learning environment consists of the teaching methods, the content and the style of discourse between teacher and students and between the students among themselves. The learning environment in the school reflects its basic assumptions on key issues in education, such as: learning, the nature of knowledge, the nature of the person and the role of the school as a social-educational institution [8,16] In addition to the desirable characteristics of the traditional learning environment (such as a supportive climate, respectful treatment of all on the school island), the innovative learning environment includes diverse and up-to-date information and communication technologies, and is used to achieve educational goals and improve teaching-learning-assessment and management processes [17]. Technology has significant pedagogical advantages, Technology may diversify the educational processes and experiences of students and teachers, as well as shape them, and assist teaching in the approach of knowledge building [18,19].

Researchers dealing with learning environments are divided between those who see the learning environment as an objective array in the learner's environment, and those who believe that the learning environment depends on the learner's subjective perception. If this is the case, the same objective environment can be interpreted in different ways for different learners [20]. Beyond this complexity, learning environments include other aspects, including the cultural-socio-political context of learning, the nature of the learner and teacher and the physical design of the environment.

The cultural-socio-political context. This context refers to the values, principles and power interactions that underlie existing norms of behavior in the learning environment [21] and these affect the various aspects of learning and direct the manner of speech g and expression, the expected teacher-student relationship, desired outcomes and accepted assessment methods.

The teacher and the student. These are the main players in the learning environment; therefore, their characteristics have considerable influence. These characteristics include assumptions, attitudes, beliefs, prior knowledge, skills, and abilities [21]. Communication in the learning environment is also conducted in accordance with the roles of the players – starting with one-way communication from the teacher to the students; through two-way communication between student and teacher; to multi-directional communication between all individuals in the class, according to the needs of the learning task [1,15,22].

3. Functions of the Learner

By functions, the following are understood: approaches, inclinations, knowledge, skills and habits as expressed in the actual independent behavior of the individual, or performance in various situations in life [23,24]. The essential functions of the learner in the 21st century can be classified into six main categories: cognitive function – capacity of the learners to delve into various subjects while maintaining thinking processes at various levels; metacognitive function – capacity of the learners to reflect upon their learning process; self-monitoring function in learning – capacity of the learners to select, define and manage their learning goals; interpersonal function – capacity of self-control and self-discipline, assuming responsibility and perseverance; intrapersonal function – capacity of the learners to know themselves, to have a sense of competence, to regulate their behaviors; sensory-motor function - capacity of the learners to use their sensory-motor functions in the support of learning and for the structuring of knowledge as well as for living a healthy life [23,24]. These aspects are not disconnected from the characteristics of the physical learning environment and the culture in which the students grow and develop; hence the importance of the learning environment for shaping the educational experience of the learners in relation to their specific culture [25].

4. Physical Learning Environment and the Functions of the Learner

The learning space is a vital component of learning. This should be a congenial and accessible area, designed to support the emotional and experiential process undergone by the student in the course of learning. Therefore, this environment requires flexibility and adjustability to changes, so that it may facilitate learning and that it may have, in itself, a teaching nature. Designing this environment is with the participation, inter alia, of parents, educators and architects, who understand the importance of such spaces for the learners.

Along with the personal traits of the students and the influence of their field of knowledge, the “place” in which the students act, i.e. their learning environment, is of prime importance. The better the culture and the identity of the students is expressed in the physical learning structure, the stronger their connection will be to the processes taking place in the educational institution [12,13]. Therefore, a physical learning environment that has a decidedly and declared Western character is likely to repress the students, as their culture is not represented and is not perceptible in this space. Moreover, the characteristics of the learning environment influence the manner in which the students set goals and their adjustment processes.
According to the socio-cultural approach [26,27], different educational contexts increase the motivation of the students to engage in different types of tasks and offer them different possibilities for applying self-adjustment processes.

Different environments have a different effect on the various ways in which students relate between goals and strategies of action [28,29], and they act differently regarding the self-adjustment processes applied in the performance of a task. The question is asked, to what degree environmental factors influence the achievement goals: to what extent do the goals derive from personal traits and are in themselves a persistent trait of the student, and to what extent are they dependent on the environment, and therefore dynamic and open to change? There are personal factors that influence the achievement goals of the students, such as previous learning experience, family background, how they perceive their personal ability, and attitude toward the subject. However, environmental factors, such as the classroom situation [30] and expertise have a significant influence upon the goals that the students select for themselves and can attenuate personal differences and change behavioral patterns [17,30].

The environment helps to orients the students towards certain goals, and this has a significant influence on the goals they set for themselves and how on the manner in which they act when performing a task [31]. Turner et al. [27] claim that, in the learning environment of the classroom, there are teaching patterns that encourage expertise goals, characterized by cognitive as well as emotional components [27]. Turner et al. [27] founds that classroom goals with emphasis on expertise, were influenced by the atmosphere of learning, understanding, effort and enjoyment. Any change in the learning environment can affect motivation, opening the door to intervention in order to improve, by furthering goals that promote learning [32].

In a study of Australian school principals, principals reported that teachers who teach in schools with a higher proportion of flexible learning spaces have more advanced thinking frameworks, and vice versa: In schools with mostly traditional classrooms principals reported less advanced thinking frameworks for teachers. Students in traditional classrooms were presented as having superficial learning characteristics, whereas in more flexible learning spaces, they were presented as having deeper learning characteristics. The researchers argued that although this study depended on principals' perceptions, it was sufficiently comprehensive to enable concluding that there is a relationship between the type of learning spaces, teaching methods, teachers' thinking patterns and the type of learning of students. The study did not examine the causal relationships between these factors, but provided a detailed overview of the current situation, and may serve as a platform for future discussion of opportunities and challenges inherent in the use of innovative learning spaces [33].

Velissaratou [34] mentions that the learning quality depends upon the degree of compatibility between the teaching strategies and the physical learning and physical environment in which the learning takes place. Komendat [35] mentions in her study that the appropriate design of the learning environment in the classroom influences upon the behaviors of the students and on the quality of their learning. A learning environment designed in a challenging and flexible manner stimulates the teachers to adopt teaching strategies that enable the students to take an active part in the learning process and it also contributes to optimal learning [36].

In the study of Mulcahy et al. [16], it was found that a flexible learning environment contributes to more meaningful learning and engenders positive changes in the students. In another study [40], it was found that the learning environment, though influencing on the learning of the students, is not sufficient, and that changes in the nature of teaching and learning methods in schools are also necessary.

Studies on elementary schools in Arab education systems have shown that a rich, adaptable, flexible and diverse physical learning environment positively influences the learner's functioning and the quality of his learning, and endows him with challenging learning spaces that meet his cognitive, psychological and emotional needs [37,38,39,40,41].

Hence, it is important that the physical learning environment in schools in Oriental communities is designed to express faithfully the culture of these communities, in order to minimize the alienation of students and teachers in these schools.

Studies that examined the differences in the perception of the teachers as to the importance of the physical learning environment for the achievements and for developing functional skills of the students found that there are differences between experienced and less experienced teachers. This is to the effect that experienced teachers realized that the design of the learning space and a flexible and rich physical space contribute to the quality of their teaching and to the nature of the learning of their students [37,42]. It was also found that teachers with a master's degree, or higher academic degree, had a more positive approach and realized that the physical learning environment influences the teaching and learning processes, both for the teachers as well the students. No differences were found among the teachers with respect to their specialization; no differences were found among the teachers as regards their gender. Nonetheless, in some studies, differences were found between science teachers and those teaching other subjects; the science teachers clearly considered the physical learning environment as a factor significantly improving the quality of teaching and learning [34,43] apparently, the requirements of the subject taught compel the teachers to create a specific learning environment.

In conclusion, it can be stated that most of the studies show that the teachers perceive the physical learning environment as having a significant influence on the quality of their teaching and on the quality of the students’ learning. The question of the present study is how teachers in elementary schools in the Arab education system in Israel perceive the impact of the physical learning environment on the quality of their teaching and the quality of students' learning? The research is pioneering and the research question becomes even more important in that teachers in the Arab education system in Israel adopt, in most cases, traditional teaching styles. And function within a unique, discriminated and isolated minority and live within a developing society with clear signs of tradition [1].
5. Methodology

The study is a correlative study that examines the relationship between the physical learning environment and the learner's functioning from the point of view of teachers in elementary schools in the Arab education system in Israel.

5.1. Hypotheses of the Study

1. A positive relationship will be found between the physical learning environment and the functioning of the learner in elementary schools in the Arab education system in Israel, from the point of view of the teachers.

2. A difference will be found in the perception of the teachers as to the relationship between the physical learning environment and the functions of the learner, depending on demographic variables (gender, teaching seniority, specialization and educational level).

5.2. Variables of the Study

Demographic variables (as independent variables): gender, level of education, teaching seniority and specialization.

Independent variable: physical learning environment.

Dependent variable: functioning of the learner.

5.3. Participants

In the study 200 teachers participated from elementary schools in the Arab education system in Israel. The schools were selected in a random sample from the schools lists of the Ministry of Education; the teachers from each school were selected in a random sample.

Table 1. Demographic Characteristics of the Participants

| Variable         | Group     | Number | Percentage |
|------------------|-----------|--------|------------|
| Gender           | Male      | 87     | 43.5       |
|                  | Female    | 113    | 56.5       |
|                  | Total     | 200    | 100.0      |
| Level of education | B.A.     | 153    | 76.50      |
|                  | M.A.      | 35     | 17.50      |
|                  | Ph.D.     | 2      | 1.00       |
|                  | Others    | 10     | 5.00       |
|                  | Total     | 200    | 100.0      |
| Teaching seniority | 1 to 15 years | 75     | 37.5       |
|                  | 16 to 25 years | 88     | 44         |
|                  | 26+ years  | 37     | 18.5       |
|                  | Total     | 200    | 100.0      |
| Specialization   | Languages (Arabic, Hebrew, and English) | 75     | 37.5       |
|                  | Mathematics | 35     | 17.5       |
|                  | Special Education | 38     | 19.0       |
|                  | Sciences   | 27     | 13.5       |
|                  | Others     | 25     | 12.5       |
|                  | Total      | 200    | 100.0      |

5.4. Research Tools

The study relied on data collected by means of questionnaires for personal reporting. The questionnaire was divided into two parts:

1. Socio-demographic data: education, gender, teaching seniority and specialization.

2. The teachers’ perception of the importance of the physical learning environment and of its influence on the functioning of the learner. The questionnaire consists of 20 questions designed to assess the perception of the teachers regarding the importance of the physical learning environment with respect to the functioning of the learner. For instance, the teachers were asked how important the physical learning environment is for the functioning of the learner, how important a flexible physical learning environment is for the functioning of the learner, etc.

5.5. Study Process

The study was carried out in the month of January in the academic year 2019-2020, on a school basis. The researcher distributed he questionnaires personally to the teachers. The researcher explained to them the aims of the study; it was emphasized that the data are anonymous and that they will serve solely for research purposes. All the teachers responded positively, cooperated and returned the questionnaires at the same meeting. The data processing was done using SPPS statistical analysis; and descriptive statistics and the Pearson correlation were used for verifying the hypotheses of the study.

6. Findings

The data were presented in the order of appearance of the hypotheses. First hypothesis: A positive relationship will be found between the physical learning environment and the functioning of the learner in elementary schools in the Arab education system in Israel, from the point of view of the teachers. For verification of this hypothesis, the Pearson value was calculated for the relationship between the two variables. The findings are presented in Table 2 hereunder.

Table 2. The relationship between the physical learning environment and the functioning of the learner from the point of view of the teachers (N=200)

| Physical learning environment and the functioning of the learner (N=200) |
|-----------------|-----------------|
| Index | r | p |
|-------|----|---|
| Physical learning environment and the functioning of the learner | 0.57** | 0.00 |

** Observation: p<0.00.

The findings in the table above show that there is a positive correlation between the physical learning environment and the functioning of the learner, from the point of view of the teachers (r=0.57, p<0.00).

The second hypothesis of the study was that differences will be found in the opinion of the teachers as to the relationship between the physical learning environment and the functioning of the learner, depending on demographic variables. A T-test was carried out and the statistical significance degree was determined. The findings are presented in Table 3 below:
The findings in the table above indicate that no difference was found between teachers in their view of the relationship between the physical learning environment and the functioning of the learner. There certainly was no difference between the teachers in relation to their level of education, subject taught or teaching experience, with the exception of science teachers whose average was higher than other teachers (3.57). Therefore, the research hypothesis was partially rejected.

7. Discussion

The first hypothesis of the study was that a positive relationship will be found between the physical learning environment and the functioning of the learner in elementary schools in the Arab education system in Israel, from the point of view of the teachers. The hypothesis was confirmed, and the findings showed that there are statistically significant correlations ($r=0.57$, $p<0.00$) between the physical learning environment and the functioning of the learner in Arab schools in Israel, from the point of view of the teachers. This finding is supported by the findings of several studies [3,10,11,37,38,40,42]. Teachers in elementary schools in the Arab education system are aware of the impact of the school's and classroom's physical learning environment on students. But this awareness is not translated into their daily activity. Although teachers can not influence all components of the physical learning environment in the classroom (such as size, structure and lighting and level of ICT), they can affect a variety of other components: innovative teaching methods tailored to students' learning styles, empowering assessment methods, furniture arrangement, level arrangement, creation of personal space, level of visual load and color in the classroom and more.

Although the infrastructure and environmental resources in Arab primary schools are defective and do not suit the needs of students and teachers [1,15], proper and effective use of existing school and classroom resources can promote meaningful learning and create an environment that promotes thinking, creativity and self-learning, and will encourage personal growth and social involvement. Thus, they contribute to the development of the cognitive, emotional, social and aesthetic nature of students, which can help to close the gaps in achievement between them and Jewish students on international tests [7]. Hence, it is important that the architectural design of buildings and physical learning spaces faithfully express the Arab learner's culture and community, in order to feel they belong, are connected and contained in these learning spaces.

The second hypothesis of the study was that differences will be found in the opinion of the teachers as to the relationship between the physical learning environment and the functioning of the learner, depending on demographic variables. This hypothesis was partially refuted. The findings did not indicate a difference in the opinion of the teachers as to the relationship between the physical learning environment and the functioning of the learner, so that, from the point of view of the teachers, the demographic differences had no impact on their perception of this influence. The teachers of the sciences attached greater importance (3.57) to the physical learning environment for the functioning of the students than the other teachers, probably because of the uniqueness of these subjects. These findings are partially supported by various studies [37,38,43,34].

8. Recommendations

We recommend that, in the future, studies with a larger sample of educators be carried out, so that such studies include both Muslim and Christian Arab teachers, as well as Jewish teachers, and that a comparison be made with other societies in the world (traditional, evolving and modern), from the point of view of the relationship between the physical learning environment and the functioning of the learners. It is also recommended to examine the relationship between the physical learning environment and the functioning of the learners in the presence of additional variables such as teacher and student personality variables. Studies integrating quantitative and qualitative research paradigms are also recommended.

For teachers in the Arab education system in Israel and for teachers in general are advised to devote their thoughts, efforts and resources to the design of a rich physical environment that promotes thinking, creativity and self-learning, and will encourage personal growth and social involvement. This finding is supported by the findings of several studies [37,38,43,34].

| Variable | Group | No. of teachers | Average | Sd  | T-test | F      |
|----------|-------|----------------|---------|-----|--------|--------|
| Gender   | Mail  | 87             | 3.26    | 0.52| 1.21   | F= 1.2 |
|          | Female| 113            | 3.16    | 0.60|        | p= 0.23|
| Education| B.A.  | 153            | 3.38    | 0.45|        | F= 1.63|
|          | M.A.  | 35             | 3.13    | 0.68|        | p= 0.26|
|          | Ph.D. | 2              | 3.18    | 0.50|        |        |
|          | Others| 10             | 3.20    | 0.52|        |        |
| Teaching experience | 15-1 | 75             | 3.17    | 0.49|        | F=1.61 |
|          | 25-16 | 88             | 3.08    | 0.61|        | p= 0.18|
|          | + 26  | 37             | 3.32    | 0.51|        |        |
| Specialization | Languages | 75     | 3.05    | 0.39|        | F= 0.56|
|            | Math  | 35             | 3.27    | 0.57|        | p= 0.76|
|            | Sciences | 27     | 3.57    | 0.52|        |        |
|            | Special Education | 38     | 3.29    | 0.61|        |        |
|            | Others | 25             | 3.20    | 0.40|        |        |
learning environment, appropriate for the culture and the needs of the students, in particular in view of the challenges faced by schools at this time. Educational institutions in the education system in general, and in the Arab minority in Israel in particular, are recommended to take into account the relationship between the physical learning environment and the functioning of the learners when designing a learning environment in schools and classrooms. The decision-makers in the Ministry of Education and local authorities should take into account the relationship between the physical learning environment and the functioning of the learners when deciding on the renovation or building of new schools.

The research findings can provide information for teachers interested in refreshing their traditional patterns for new practices, or at least for outlining the characteristics of an effective learning environment. In addition, the findings of the study can be useful for teacher training programs, both in raising the issue of the physical learning environment as well as its significance for learning and in acquiring skills for designing and creating a rich physical learning environment tailored to the needs of learners.

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