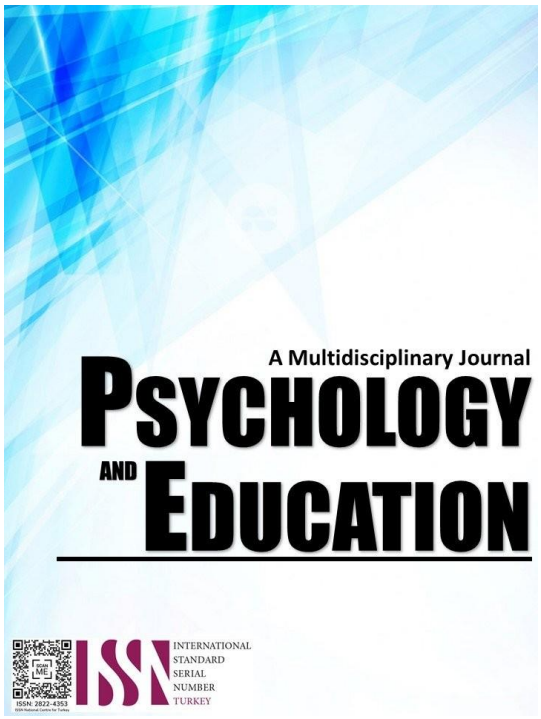
EFFECTS OF SPACE ON THE ACADEMIC LEARNING IN SCIENCE CLASSROOM: A BUILDING BLOCK FOR ENHANCING SCIENCE CURRICULUM



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Research Article

Effects of Space on the Academic Learning in Science Classroom: A Building Block for Enhancing Science Curriculum

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Abstract

This study aims to evaluate the effect of space on the learners on the academic learning. The respondents of this study were the 30 grade five pupils of Benjamin Aguilar Elementary School. Results revealed that, as an entire group, the effects of space on academic learning was described as "very highly effective" with a mean of 4.7937 (SD = 0.21063). The effect of Space when grouped into sex, male respondents had a mean of 4.7931 which meant "very highly effective" and the female respondents had a mean of 4.8438 which meant "strongly agree". When grouped into Parents' Monthly Income, 10k and above had a mean of 4.8162 which meant "very highly effective" and 10k below had a mean of 4.8235 which meant "very highly effective". Results showed that there was no significant difference on the effects of space on the academic learning of grade 5 learners when grouped into sex with p-value of 0.62 (df-28)thus the null hypothesis of no significant difference was accepted. When grouped into family income, no significant differences was also noted in the effects of space in the academic learning of grade 5 learners. Thus the null hypothesis was accepted (p-value= 0.916; df=28).

Keywords: *family income, public school, elementary learners, space, academic learning*

Introduction

"Education must continue even in times of crisis whether it may be a calamity, disaster, emergency, quarantine, or even war".(Briones, 2020). The COVID-19 pandemic is first and foremost a health crisis. Many countries have (rightly) decided to close schools, colleges and universities. The crisis crystalizes the dilemma policymakers are facing between closing schools (reducing contact and saving lives) and keeping them open (allowing workers to work and maintaining the economy). The severe short-term disruption is felt by many families around the world: home schooling is not only a massive shock to parents' productivity, but also to children's social life and learning. Teaching is moving online, on an untested and unprecedented scale. Student assessments are also moving online, with a lot of trial and error and uncertainty for everyone. Many assessments have simply been canceled. Importantly, these interruptions will not just be a short-term issue, but can also have long-term consequences for the affected cohorts and are likely to increase inequality.

COVID-19 has changed education for learners of all ages. Preliminary data project educational losses at many levels and verify the increased anxiety and depression associated with the changes, but there are not yet data on long-term outcomes. Guidance from oversight organizations regarding the safety and efficacy of new delivery modalities for education have been quickly forged. It is no surprise that the socioeconomic gaps and gaps for special learners have widened. The medical profession and other professions that teach by incrementally graduated internships are also severely affected and have had to make drastic changes.

Fall is right around the corner and those concerned with K-12 learning - district and school leaders, teachers, and families are still grappling with how and where they will educate students in the age of COVID-19. Of course, much of the conversation is focused on maintaining appropriate physical distance, especially in schools. Many district and school leaders are focused on how and where students will safely learn, eat lunch, and take part in regular activities such as music, art, and sports. Can the gym be repurposed? Would the auditorium work as a class space?

While considering new uses for and formations of school space, planners might also consider whether these spaces will be conducive to learning. Interdisciplinary research links the physical condition of learning spaces, such as good ventilation and air quality; green, outdoor recreational space; comfortable temperature; pleasant lighting; and an environment with limited ambient noise, to improved student physical health and academic performance (PDF).

Another study, conducted by my RAND colleagues in Baltimore city public schools, found that positive student perceptions of school climate, which included building conditions, are correlated with lower incidence of student mental health concerns, which is in turn is correlated with positive student academic

outcomes. Further, a large study of 27 school in the UK identified seven building design features—including color, light, air quality, and temperature—which, holistically, are linked to differences in students' academic achievement.

One of the factors overlooked in the teaching aids learning process is the impact of space (i.e the affordances of spaces and tools in learning (Van Note Chism and Bickford 2002) In other words, the design of a learning space has an effect on the learning process.

Thus, it is important to design a learning space with the learning process in mind. Learning Space Design Theory. It is vital to give coherence and consistency to the design of learning spaces by balancing learning theory, faculty and student, culture, institutional goals and resources, all in the face of a rapidly changing digital environment.

Research Questions

Specifically, this study sought answers to the following questions.

1. What is the level of effect of space on learners on their academic learning when taken as a whole?
2. What is the level of effect of space on learners on their academic learning when classified according to sex and family monthly income?
3. Is there significant effect of space on learner's academic learning?

Methodology

Research Design

This research study entitled, Effect of Space on the Academic Learning of Benjamin Aguilar Elementary School Learners during the Pandemic, utilized the quantitative method using quasi-experimental research. Creswell (2002) noted that quantitative research is the process of collecting, analyzing, interpreting, and writing the results of a study, while qualitative research is the approach to data collection, analysis, and report writing differing from the traditional quantitative approaches.

Respondents of the Study

The respondents of this study were the 30 grade five pupils of Benjamin Aguilar Elementary School. Table 1 shows the distribution of respondents.

Table 1. Distribution of Respondents

Section	*f*	*%*
1	15	50%
2	15	50%
Total	30	100

Data Gathering Instrument

The instrument of this study was a researcher-made instrument. The researcher-made instruments has two parts; Part I is the General information which gathered the personal information of the respondents: name (optional), sex, and family income; Part II of the questionnaire determined the level of Effect of Space on Learners on their Academic Learning. It has 18 items. The respondents were instructed to check the column to indicate their answer to all questions. When all questions were answered, the frequency count for each response in every item was determined.

Procedure

The instrument used to gather data was researcher-made questionnaire. The researcher-made questionnaire was validated and made sure that it was reliable. The researcher secured approval from the District Supervisor, school's District of Lemery and School Head of Benjamin Aguilar Elementary school.

The researcher personally went to Benjamin Aguilar Elementary School for proper protocol. Questionnaire was distributed to the Grade Five Pupils as the respondents. The researcher explained to the respondents on how to answer the questionnaire. The respondents supplied the data needed.

The researcher waited for the questionnaire to be accomplished and gathered them immediately after the respondent finished answering the items.

Statistical Tool

For the data analysis, descriptive and inferential statistics was used to analyze and interpret data. The following were used in this study: Frequency Count, Percentage, Mean and t-test for independent samples.

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Results

Table 2. Effects of Space on Learners on their Academic Learning taken as a Whole

Whole Group	*Mean*	*Std. Deviation*	*Verbal Description*
Entire Group	4.7937	.21063	Very Highly

Results revealed that, as an entire group, the effects of space on academic learning was described as "very highly effective" with a mean of 4.7937 (SD = 0.21063).

Table 3. Effects of Space on Learners on their Academic Learning when Classified According to Sex and Family Income

Category	*Mean*	*Std. Deviation*	*Verbal Description*
Sex			
Male	4.7931	.21063	Very High Effective
Female	4.8438	.15611	Very High Effective
Family Income			
10k and above	4.8162	.18756	Very High Effective
10k below	4.8235	.18345	Very High Effective

The effect of Space when grouped into sex, male respondents had a mean of 4.7931 which meant "very highly effective" and the female respondents had a mean of 4.8438 which meant "strongly agree".

When grouped into Parents' Monthly Income, 10k and above had a mean of 4.8162 which meant "very highly effective" and 10k below had a mean of 4.8235 which meant "very highly effective".

Table 4. Difference of effects of space in the academic learning of grade 5 learners.

Whole Group	*Df*	*p-values*	*Findings*
Sex	28	0.462	Not Significant
Family Income	28	0.916	Not Significant

Results showed that there was no significant difference on the effects of space on the academic learning of grade 5 learners when grouped into sex with p-value of 0.62 (df-28)thus the null hypothesis of no significant difference was accepted.

When grouped into family income, no significant differences was also noted in the effects of space in the academic learning of grade 5 learners. Thus the null hypothesis was accepted (p-value= 0.916; df=28)

Discussion

The design of traditional learning spaces proceeded from the assumption that learning is largely confined to such formal spaces. Current views on learning acknowledge that much, if not most, learning does not occur in formally designated learning spaces (Cross, 2007), but rather, in informal spaces not necessarily originally envisaged as learning spaces. This realization lies at the heart of liberating learning from a form of physical imprisonment.

The physical space of the classroom, and where that space directs attention, affects students' perceptions and how ready they are to engage in the class. For example, students perceive auditoriums and lecture halls as a passive space, for them, one in which they should listen without interacting with each other. Sitting in circles, on the other hand, where their attention is directed toward their fellow students, is more conducive to discussions among themselves (Hodges, 2018).

Research has found that learning environments play a crucial role in student success. Several factors can affect learning ability, including seating, light, noise, and even colour. Students who study in a positive learning environment have been shown to be more motivated, engaged, and have a higher overall learning ability. On the other hand, students learning in poor environments – those that are uncomfortable, loud, or full of distractions – will find it far more difficult to absorb information and stay engaged. With this in mind, let's look at how your surroundings affect the way you study, and consider some of the best ways to create your ideal learning environment.

Conclusion

1. The effect of Space in the academic learning of learners as an entire grouped was "Very Highly Effective" as the result said so. They have conducive learning space or environment that helped them with their academic learning.
2. The effect of Space in the academic learning of learners when grouped into sex, male respondents "Very Highly Effective" because they have a

conducive learning environment and it contributes to their learning as a learner. While, female respondents was also "Very Highly Effective" because they have a conducive learning environment and it contributes to their learning as a learner. However, when grouped according to Parents' Monthly Income, the result was also "Very Highly Effective" because despite the difference of their Parents' Monthly Income, they can still adapt to their learning environment as it was conducive for them.

3. The effects of space on the academic learning of learners when grouped according to sex and parents' monthly income was "Very Highly Effective" by their learning environment. Thus, the hypothesis was accepted.

In view of the conclusions generated from the findings of the study, the following recommendations are given: (1) The school must maintain a conducive learning environment for learners. (2) The learners must adapt to the learning environment despite their social status.

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