A LENS MODEL APPROACH ON ESTIMATING PERCEPTIONS OF TURKISH PRIMARY SCHOOL STUDENTS AND ARCHITECS ON IDEAL PRIMARY CLASSROOM SETTINGS

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ABSTRACT

The study has been performed on primary school students and designers (architects) in order to define the components and design factors of the ideal classroom setting in which primary school students will willingly study and to decide which setting and design factors are most suitable for effective learning. To this end, the following hypothesis was developed: *"Classroom setting perceptions of students and designers differentiate in terms of setting and design factors"*. Visuals of 20 different classroom settings from Turkey - the physical properties of which were pre-defined in detail by the control group - were used in the scope of the study. A questionnaire form was used to collect students' and designers' (architects') evaluations on the visuals; collected data were analyzed by using statistical methods. After that, a Lens-Model was adopted to enable comments on the primary classroom setting. The Lens-Model enables comparison of evaluations of different groups such as students and designers in relation to the same space. Also the present study defined setting and design factors suitable for positive learning by using the preferences of the students and designers. Findings and obtained perceptions of classroom setting were determined to differ from each other in terms of environmental and design factors. These variances also indicated age and education factors as two parameters of significant importance for perception studies. In addition, the study revealed that the Lens-Model method enables successful comparisons between the preferences of different groups such as students and architects related to the same setting.

Keywords: Spatial perception, comparison of preferences, positive learning, classroom design, Lens-Model

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1. INTRODUCTION

Architects create spaces that provide environmental and social conditions that are designed to enable individuals to conduct their lives without feeling great physiological, social and psychological discomfort; these spaces are also designed to enable optimal efficiency in work. Spaces are designed to serve this objective certain physical and psychological needs of human beings. There is a relationship how spaces affect their users, and the efficiency of the work undertaken in that space. Spatial design should consider potential effects on inhabitants and provide the physical arrangements that will make positive contributions in the use purpose of the space. At this point, it is necessary to determine user demands as well as user needs. Today, the human-space relationship is considered an important issue and studies are conducted on qualified space arrangements in line with these user demands. While architectural studies mainly focused on the structural properties of spaces up to the 1980s, the psychological effects of space on individuals has come into consideration in the last three decades. In this scope, studies have been conducted on how the physical properties of a space affect individuals. Spatial perception and spatial psychology are considered important factors in increasing the efficiency of the work undertaken in that space and studies are conducted on qualified space arrangements. Detection of qualified space properties for specific use is only possible via environmental-behavioral studies that facilitate consideration of user opinions. Environmental-behavioral study is a type of study which contributes to the design process by considering user opinions on designed environments and analyzes and studies the interaction and behavior of humans, as well as the consistency-inconsistency between human and environment. Literature studies on environment-behavior are primarily conducted on adults; however, there are some studies - although quite limited in number - with children. Children represent a significant part of the world population and, yet, cannot always make themselves heard. According to Thorbjorn (1992), the physical environment of children evolves on the basis of basic needs; environment - as a whole - tends to be a unit of houses and neighbourhood. Studies on children as a user group generally focus on homes and school buildings. These studies reveal the socio-demographic characteristics of children and interpret findings by relating them to these socio-demographic characteristics. There are studies on the detection of socio-economic structure, facilities provided for children and differences in the spatial perceptions of children. In a study on the effects of socio-economic level on environmental awareness and environmental academic achievement (Uzun and Sağlam 2005), findings indicated that environmental awareness differed on the basis of socio-economic structure and that there was a direct correlation between environmental awareness and academic achievement. Socio-economic structure is an important factor in such studies. In addition to these studies, there are others that investigate the effects of color, illumination and seating arrangements on student achievement and behavior. Conclusions from these studies indicate that such similar physical characteristics as color, illumination and seating arrangement do affect student achievement and behavior. There are a number of studies on the ergonomics and suitability of

551

furniture used by children. In addition to these, there are limited number of studies that analyze both the effects of spatial components on a child's perceptions and emotional reactions, under the topic of environmental psychology-architectural psychology. In particular, studies on educational sciences have shown that different spatial arrangements affect student achievement. In this context, it is expected that the design and arrangement of classroom settings, in line with students' demands will have positive effects on learning motivation. Arrangement of physical variables appropriate for positive learning in the classroom setting can be successful through the production by a space designer of solutions related to disciplines such as classroom management, educational sciences, etc. In designing the classroom setting - a multidimensional issue - the space preferences of different user groups (particularly students and classroom teachers) appropriate for optimal learning conditions should be clearly defined; user preferences that are different should be compared; and the common denominator of user evaluations should be defined.

2. CONCEPTUAL FRAMEWORK and HYPOTHESIS

In this study, classroom setting parameters based on user perceptions were analyzed to determine the setting arrangements (setting and design factors) optimal for constructive learning. The hypothesis developed for this objective is *"Classroom setting perceptions of students and designers differentiate in terms of setting and design factors"*. Using the method known as Lens-Model in the literature, and which enables comparison of evaluations made by different user groups in relation to the same space; the present study defined setting and design factors appropriate for positive learning, by comparing the preferences of the experimental group composed of designers and students.

3. LENS-MODEL APPROACH

Environment-behavior studies are conducted using one or several methods and techniques like questionnaires, visual questionnaires, simulation techniques, interviews, physical tracks documents and behavioral observations (Başkaya et al. 2003). In such studies, it is possible to collect information about/to evaluate only the opinions of one user group. However, in practice, many spaces may be used by many different user groups. Lens-Model is a method that enables comparison of different user group evaluations of one space, providing input data for architects in the design process. First developed by Brunswik (1955) for environmental perception studies and then modified by other researchers, Lens-Model is used in areas from medical treatment to weather forecast. In recent years, it has been used in architecture as well (Dinç and Yüksel, 2010, Douglas and Gifford 2001, Gifford et al. 2002). Gifford recently improved this model and adapted it into architecture as a model used only by designers. On one hand, the conventional Lens-Model includes ecological reality, which constitutes a connection set composed of real measurements and observable characteristics of the related environment. On the other hand, Lens-Model is a method of using evidence, which is the connection

between observable characteristics and individual evaluations. By adapting it, Gifford re-arranged Lens-Model according to evidence use for two different groups, the evaluations of whom are taken as a basis. Results are derived from the idea that there is no absolute truth but the evaluations of two groups. Lens-Model can also be explained as a model that enables association of subjective spatial judgments with objective data of this space.

4. METHOD

Directed at primary school classroom settings, this study was conducted on primary school 2nd grade students (n=189) and university 4th grade (8th semester) architecture students (n=76), randomly selected from the regions representing low and high socio-economic groups of Turkey. Fourteen academicians lecturing in the architecture faculties of various universities were selected into the "control group". A questionnaire was given to students to enable them to evaluate the classroom setting using pre-defined concepts and to the control group to enable them to define objective characteristics of the study classroom settings. In the scope of the questionnaires, 20 classrooms (with different properties) from ten public and private primary schools were selected. In choosing these 20 classrooms, special attention was paid to select samples (small and large classrooms with different forms and dimensions, equipped with a variety of furniture and with varying design) that would represent primary school classroom settings in Turkey. To obtain generalizable results for primary classroom settings, the questionnaire was given to students (taught in similar physical environments) attending official primary schools located in different socio-economic regions and planned according to the typical primary school projects that represent the majority of Turkish Schools. Students attending the schools of 20 classrooms were excluded from the experimental group. Since experimental groups included young students, short video shoots (nearly one minute) were used in addition to photos so as to clarify spatial perception. This is the first study to use this method with Lens-Model (Arslan 2010).

Questionnaires were given in two parts. In the 1st part, the questionnaire was given to 2nd grade students and architects and in the 2nd part, to the academicians lecturing in the architecture department (control group). The physical properties of 20 classrooms included in the questionnaire process were defined in detail in line with the data provided by the control group. Presenting a pilot study previously carried out with the researcher, the first part of the questionnaire form was given to 2nd grade students before they entered classrooms for evaluating. The second part of the questionnaire included questions on classroom evaluations. Two photos of a classroom setting and four questions related to this classroom were presented in each page of the questionnaire. Taking into consideration that the study's target group was composed of young people, scripts were used (in the light of pilot applications) to ensure clear explanation of the concepts in question. In the questionnaire given to classroom teachers, they were asked to evaluate - in line with their educational background - classroom settings in terms of primary school students. Like the questionnaire given to the 2nd grade students, each page of the architects'

questionnaire presented one photo and four questions related to each classroom. In the questionnaire given to students and architects, they were asked to answer the questions by scoring on a Likert-type scale between two opposite answers. Before entering data into analysis program, scores collected from the scale were redefined in numbers with the help of a transformation scale. In the questionnaire given to the control group, they were asked to define objectively the physical properties of the internal classroom environments used in the study. To define properties of a specific space, literature studies use questionnaires based on semantic differentials to collect individual opinions. A questionnaire based on semantic differentials was also used in the present study to define the objective properties of a classroom setting. Adjective pairs used in the questionnaire were selected on the basis of the properties of classroom settings; criteria to be considered in primary classroom designs; characteristics of children. Adjective pairs related to internal classroom environments used in the study. The control group was asked to evaluate the spatial properties of each classroom using the adjective pairs defined and, their answers were collected using a 5-point Likert-Type scale (Arslan, 2010; Arslan and Ceylan 2012).

5. RESULTS and DISCUSSION

According to this study, the general findings are given below;

- This study, conducted with two different age groups, included a control group composed of experienced architect academicians so as to ensure determination of the design factors of the questioned classroom settings objectively and to increase the study's reliability. Students and architects, who were only asked their conceptual opinions about the space-, were related to the classroom's spatial properties, which were defined by the control group.

- In the present study, the preferences of the 2nd grade students were related not to physical properties included in the spatial properties list, but to spatial properties with conceptual character, an indication that spatial properties with conceptual character should also be used in studies.

- In this study, different primary classroom settings were selected to define the properties of a classroom setting in terms of primary school students. To find a classroom setting to serve as a solid example of rule compliance, primary classrooms were accessed, regardless of the age group. While evaluations were made on the basis of photos in similar studies in the literature, this study based evaluations on short video shoots to ensure better visualization of spaces by small children. In addition, to shorten the questionnaire administration process (to prevent students from getting bored), the study was limited to 20 classrooms, the lower limit applied in such studies.

- The story-making method was also used to ask questions to the young children who participated in the study. This study has also brought a new

perspective to Lens-Model design; using a model not previously seen in the literature: evaluations were made on the basis of short video shoots of the spaces subjected to evaluation.

- The results of present study indicate that the number of spaces evaluated in the scope of these studies should be higher than those of architectural components/spatial properties and the efficiency level of architectural components/spatial properties on questioned concepts should be defined more precisely in statistical terms. The Lens-Model method enables a comparison between the evaluations of different groups about the same space and provides information that can serve as input data for architects in design process.

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