

**COMPARATIVE ANALYSIS BETWEEN AN ERGONOMIC EVALUATION AND THE USERS' SATISFACTION OF NEW EDUCATIONAL CENTERS**

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## 1 INTRODUCTION

Globalization is transforming all the products in comfort, while clients, current or potential, are constantly increasing demands and expectations, products seemed fine yesterday, today may not be satisfactory, it is then that to win and retain customers, organizations need to find something to turn into a competitive advantage, that element is the quality. All organization looking to be more competent and always at the forefront, offering the best to its customers and users, resulting in a successful project.

The managing a project involves the application of knowledge, skills, tools, and techniques to project activities so that they meet or exceed the needs and expectations of the stakeholders of a project. The factors for the success of the project are the set of circumstances, facts, or influences which contribute to the project results. The success of the projects we perceive from two approaches, one micro which is represented by the cost, delivery time and meet customer specifications, the other is the macro that represents the total satisfaction of the user who uses it.

The present work of investigation is a comparative analysis between studies of "Verification of the environmental conditions in the facilities design of new buildings at the preschool level creation in the education sector in Hermosillo, Sonora" and "Anthropometry and verification of facilities design buildings at the preschool level ups in the education sector in Hermosillo, Sonora", against the results of the study "Factors influencing the satisfaction of user of schools newly created basic level in Hermosillo, Sonora ", There are no studies that serve as background or base for departure because it is a recent project of the Sonora Institute for Educational Infrastructure, which reports to the State Government and which has never measured the satisfaction of users of such works public.

## 2 OBJECTIVES

Making a comparison between the perceptions of the user against the measurements obtained in the two studies mentioned above, concurrent, and find out if its result compared with the official standards and anthropometric measures for installations in schools, have a value of significance in user satisfaction. Be conducted only in the municipality of Hermosillo, Sonora, in the four schools of this type found in the city.

## 3 METHODS

Was determined primarily based sample, in this case 32 which is the total of people working in these institutions, being interviewed teachers, administrative and support, were interviewed by school staff, as direct users , to hear his perspective from the macro environment, as well as

some people working in the Sonora Institute of Educational Infrastructure to meet their expectations of the quality they deliver these works, that is, from the micro environment, with this design A pilot survey to discover the needs or problems that arose within those premises was a validation of the survey was applied in only one school, and was designed to be analyzed a survey based on certain items required for research using the method Servqual, which defines service quality as the difference between actual perceptions by users and is a multi-scale instrument that has a high level of reliability and validity, that any organization can use to better understand the expectations and perceptions about service users. The model includes two dimensions of expectations: expectations desired (which I'd like in ideal terms) and appropriate expectations (the acceptable level of service expected). Besides this is divided into headings such as, visual perception and environmental design, ambient conditions, safety, and responsiveness in terms of failures and complaints in the facility.

Thus, a survey was designed to apply well-defined in the entire field of study, ie, universal primary education schools and kindergartens in the newly created municipality of Hermosillo. Respondents were only administrative and teaching staff, these being the ability to direct users to answer the survey because students are also users but do not have the maturity to respond coherently to the research questions.

#### 4 RESULTS

In implementing the surveys, we will realize the factors that influence the level of satisfaction of users of each of these schools, we can compare each of them, finding differences and similarities between themselves and in turn, and by type of primary or preschool, and thus may provide

feedback to those implementing this project, and be able to carry not only the success of the micro environment but also from the macro. As well as we can compare these plots obtained in the surveys carried out against the measurements obtained in the other two parallel research this and see whether they comply with official standards, and then be detected if it affects the user satisfaction.

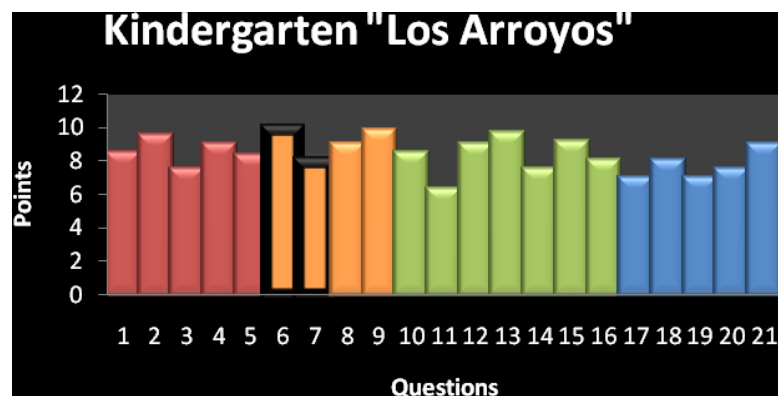


Figure 1. Results obtained in the survey research, "Factors are influencing the satisfaction of users of schools newly created basic level in Hermosillo, Sonora", in the Kindergarten "Los Arroyos".

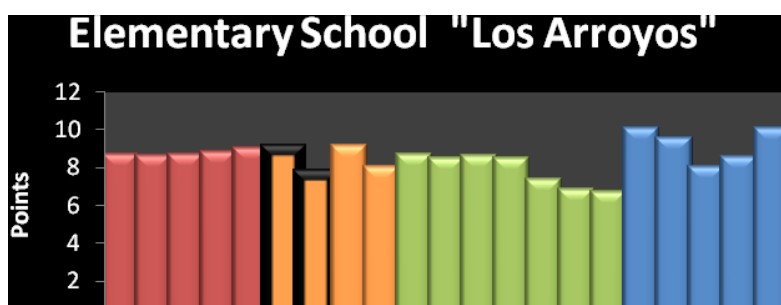


Figure 2. Results obtained in the survey research, "Factors are influencing the satisfaction of users of schools newly created basic level in Hermosillo, Sonora", in the Elementary School "Los Arroyos".

The question 6, is related to the lighting of the classroom, if considered appropriate for the proper performance of students and teachers, including the cataloged in the case of kindergarten as excellent and as good in the Elementary School, giving it a rating 10 and 8 respectively. Here we

see the data in the study of "Verification of environmental conditions in the facility design of the buildings at the preschool level ups in the education sector in Hermosillo, Sonora."

Table 1. Results obtained in the ergonomic study research "Verification of environmental conditions in the facility design of the buildings at the preschool level ups in the education sector in Hermosillo, Sonora" in Kindergarten "Los Arroyos".

	ILUMINACIÓN (Lux)			
	Iluminación Natural		Iluminación Artificial	
	Max	Min	Max	Min
<b>Salón de clases</b>				
Medición #1	264.7	233.3	640	590
Medición #2	534	486	748	716
Medición #3	547	478	947	756
Medición #4	912	892	1285	1234
Medición #5	1113	1070	1389	1373
Medición #6	1181	1139	1439	1434
Medición #7	494	398	918	891
Medición # 8	632	483	980	726
<b>Baños</b>				
Baños de Hombres			421	250
Baños de Mujeres			406	335
Dirección	301.6	276.3	816	735

The minimum level of lighting according to the NOM 025 analyzed, the minimum standard of this factor must be 300 (lux) for the elderly, it is important to note that the measurement gives us a number below this value. This result gives justification to change the lighting to classify it as only good with an 8 on a scale of 5-10. The questioning in July, is related to the temperature of the room, if it is deemed for the good performance of pupils and teachers, cataloged them both in Kindergarten and Primary School under 8, or Regular. Here we see the data in the study of "Verification of environmental conditions in the facility design of the buildings at the preschool level ups in the education sector in Hermosillo, Sonora".

Table 2. Results obtained in the ergonomic study research “Verification of environmental conditions in the facility design of the buildings at the preschool level ups in the education sector in Hermosillo, Sonora” in Kindergarten “Los Arroyos”.

		1	2	3	4	5
09:30 a.m.	Min	24.5	22.8	24.7	24.5	24.6
	Promedio	25.9	24.8	26.6	25.9	26.3
	Max	27.3	26.7	28.4	27.3	27.9
10:30 a.m.	Min	28.9	28.4	29.8	29.3	30
	Promedio	29.5	29	29.7	29.6	29.9
	Max	30.2	29.7	29.7	29.9	29.8
11:30 a.m.	Min	33.3	32.4	34.2	33.9	34.6
	Promedio	33.7	33.2	34.7	34.5	35
	Max	34.1	34	35.2	35.2	35.4

The INIFED says that the environmental conditions that are suitable for work in comfort in the case of classrooms are 18 to 25 degrees Celsius and can see that this condition is not met, most of the measurements exceeds 25 degrees Celsius. Therefore, find out why the temperature is listed as fair, although the results reflected rather as bad. As for the results of the investigation "Anthropometry and verification of plant design of the buildings at the preschool level ups in the education sector in Hermosillo, Sonora" was against a comparative study and survey of the results were similar furnishings and facilities and equipment not designed for the good performance of students mainly, not based on anthropometric tables according to your needs.

Thus, these results will support this project to strengthen Sonora School, offer these areas of opportunity for improvement in those who develop, ie, the Sonora Institute of Educational Infrastructure and also propose a concurrent engineering work, where without participation of all

stakeholders, including of course, users who guarantee from a macro perspective, the success of our project.

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