

## Construction of the School Physical Environment Standardized Features Tool

### بناء أداة الموصفات القياسية لبيئة المدرسة الطبيعية

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#### المستخلص:

**الهدف:** إعتد تصميم وصفي مستخدماً الأسلوب المنهجي في الدراسة الحالية من الأول من أبريل ٢٠١٢ وإلى العشرين من مايس ٢٠١٣ لبناء أداة الموصفات القياسية لبيئة المدرسة الطبيعية.

**المنهجية:** بنيت أداة من (١٤١) فقرة لغرض الدراسة وأختيرت عينة عمدية من (٤٤) مدرسة مكونة من (٢٢) مدرسة حكومية و(٢٢) مدرسة خاصة. تحددت ثبات محتوى الأداة من خلال استخدام مجموعة من (١١) خبير من الإختصاصيين في تمريض صحة المجتمع وطب المجتمع. استخدمت مصداقية الترابط الداخلي من خلال تقانة فصل النصف وحساب معامل الارتباط كرونباخ ألفا (٠,٩٣) للمقياس الداخلي. جمعت البيانات من خلال استخدام أداة القياس والزيارات المدرسية كوسائل لجمع البيانات. تم تحليل البيانات من خلال تطبيق إجراء التحليل الإحصائي الإستدلالي كمعامل الارتباط البسيط بيرسن وتحليل العامل (المكون الأساسي).

**النتائج:** بينت نتائج الدراسة بأن الموصفات كانت معروضة، بعد إعادة ترتيبها، تحت خمسة عوامل شملت: خدمات المدرسة والإصحاح والطوارئ في المدرسة وخدمات الطعام والحماية وبيئة المدرسة الأمانة وبيئة المدرسة. لذلك يتم بناء أداة جديدة يمكن إختبارها وإستخدامها كدليل للاختبارات الجديدة. إن عرض مثل هذا للعوامل يعكس الإنموج الطبيعي الذي يمكن من خلاله إعتبار موصفات بيئة المدرسة الطبيعية عوامل أساسية للتقويم المستقبلي من خلال استخدام الأداة المبنية.

**التوصيات:** توصي الدراسة إلى إمكانية استخدام الأداة المكتشفة حديثاً كمقياس للبحوث المستقبلية والدراسات الأخرى التي يمكن إجراؤها على عينة كبيرة الحجم ومعتمدة وطنياً.

#### Abstract:

**Objective:** A descriptive design, using the methodological approach, is carried throughout the present study from April 1<sup>st</sup> 2012 to May 20<sup>th</sup> 2013 to construct the school physical environment standardized features tool.

**Methodology:** An instrument of (141) item is constructed for the purpose of the study. A purposive sample of (44) school; (22) public and (22) private one is selected. Content Validity of the instrument is determined through the use of panel of (11) expert who are specialists in Community Health Nursing and Community Medicine. Internal consistency reliability, using the split-half technique, is employed through the computation of Cronbach alpha correlation coefficient of (0.93) for internal scale. Data were collected through the use of the instrument and the schools' visits as means of data collection. Data are analyzed through the application of the inferential statistical data analysis procedure of simple Pearson's correlation coefficient and factor analysis (principle component) method.

**Results:** Findings of the study reveal that the features are presented, post their rearrangement, under five factors that include school services, emergency and school sanitation, food and protection services, safe school environment, and school environment. So, the new tool can be structured, tested and used as guide for new investigations. Such presentation of factors reflects the actual model by which the school's physical environment features can be considered as essential elements for future evaluation through the utilization of the constructed tool.

**Recommendations:** The study recommends that the new discovered tool can be used as measure for future work, and further studies can be carried out on large sample size and nation-wide base.

**Keywords:** Construction, School Physical Environment, Standardized Features, Tool

**Introduction:**

A school's environment is the thread that connects the multitude of activities on a campus. In many respects this thread is almost invisible, yet everyone experiences its influence. Positive social relationships and attitudes about school are as important to the environment as are safe and well-kept buildings and grounds. A safe, clean, and well-maintained school with a positive psychosocial climate and culture can foster school connectedness, which in turn boosts student and staff health as well as students' educational achievement <sup>(1)</sup>.

A school's physical environment includes the school building and the surrounding grounds, such as noise, temperature, and lighting, as well as physical, biological, or chemical agents <sup>(2)</sup>.

**Methodology:**

A descriptive methodological design is carried throughout the present study from April 1<sup>st</sup> 2012 to May 20<sup>th</sup> 2013 to construct the school physical environment standardized features tool. An instrument of (141) item is constructed for the purpose of the study. A purposive sample of (44) school; (22) public and (22) private ones is selected. Content Validity of the instrument is determined through the use of panel of (11) expert who are specialists in Community Health Nursing and Community Medicine. Internal consistency reliability, using the split-half technique, is employed through the computation of Cronbach alpha correlation coefficient of (0.93) for internal scale. Data are collected through the use of the instrument and the schools' visits as means of data collection. Data are analyzed through the application of the inferential statistical data analysis procedure of simple Pearson's correlation coefficient and factor analysis (principle component) method.

The design of schools is a very important factor when dealing with sanitation related to moisture. Building roofs that leak or will not stop water are detrimental. Water in classrooms leads to mold which can cause allergic reactions. High humidity and standing water also creates an environment favorable to all kinds of bacteria, which can spread diseases <sup>(3)</sup>.

So, the present study attempts to construct a tool by which the school physical environment standardized features can be evaluated. This instrument can be utilized as a measure for determining the actual status of the school physical environment for better development and modification of such environment.

## Results:

Table 1. Simple Pearson's Correlation Coefficients between different Responding of the studied Main Parts

Simple Pearson's Correlation Coefficients	The Studied Parts	Part II : The School	Part III :The School Yard	Part IV : Fire Extinguisher	Part V : Classroom	Part VI : Water cycle	Part VII : Source of water	Part VIII : First aid kit and pharmacy	Part IX : Service Staff	Part X : Antiseptics and disinfectants in school	Part XI : School Shop	Part XII : Classroom Furniture	Part XIII : Safe water to drink(drinking water)	Part XIV : Sewage disposal network	Part XV : Accidents prevention
Correlation	Part I :The Surrounding Environment	0.24	0.02	0.26	0.15	0.38	-0.02	0.01	0.40	-0.22	0.0	0.39	-0.02	0.23	-0.19
	Part II : The School		0.29	0.15	0.34	0.36	0.12	0.35	0.37	-0.19	0.2	0.26	0.31	0.13	-0.02
	Part III :The School Yard			-0.23	-0.33	-0.25	-0.15	-0.15	-0.21	-0.05	0.1	-0.13	-0.19	0.11	0.04
	Part IV : Fire Extinguishers				0.24	0.27	-0.15	0.07	0.24	-0.18	0.4	0.07	0.02	0.25	-0.30
	Part V : Classroom					0.73	0.42	0.25	0.80	-0.03	0.4	0.52	0.70	0.13	0.13
	Part VI : Water cycle						0.32	0.22	0.81	0.08	0.1	0.46	0.58	0.25	0.10
	Part VII : Source of water							0.27	0.33	0.05	0.2	0.38	0.53	-0.20	0.25
	Part VIII : First aid kit and pharmacy								0.25	0.29	0.1	0.04	0.22	-0.25	0.10
	Part IX : Service Staff									-0.12	0.2	0.48	0.47	0.33	0.06
	Part X : Antiseptics and disinfectants...										0.0	-0.09	0.31	-0.44	-0.06
	Part XI : School Shop											0.07	0.42	-0.09	-0.11
	Part XII : Classroom Furniture												0.51	0.21	0.01
	Part XIII : Safe water to drink ...													-0.09	0.17
	Part XIV : Sewage disposal network														0.09
Sig. (1-tailed)	Part I :The Surrounding Environment	0.06	0.45	0.04	0.17	0.01	0.45	0.47	0.00	0.07	0.4	0.01	0.44	0.07	0.11
	Part II : The School		0.03	0.16	0.01	0.01	0.23	0.01	0.01	0.11	0.0	0.05	0.02	0.20	0.45
	Part III :The School Yard			0.07	0.01	0.05	0.17	0.16	0.09	0.37	0.1	0.20	0.10	0.25	0.41
	Part IV : Fire Extinguishers				0.06	0.04	0.17	0.33	0.06	0.13	0.0	0.34	0.45	0.05	0.02
	Part V : Classroom					0.00	0.00	0.05	0.00	0.43	0.0	0.00	0.00	0.20	0.20
	Part VI : Water cycle						0.02	0.07	0.00	0.31	0.1	0.00	0.00	0.05	0.26
	Part VII : Source of water							0.04	0.01	0.37	0.0	0.01	0.00	0.09	0.05
	Part VIII : First aid kit and pharmacy								0.05	0.03	0.1	0.41	0.08	0.05	0.27
	Part IX : Service Staff									0.23	0.0	0.00	0.00	0.01	0.35
	Part X : Antiseptics and disinfectants...										0.4	0.28	0.02	0.00	0.34
	Part XI : School Shop											0.33	0.00	0.27	0.25
	Part XII : Classroom Furniture												0.00	0.09	0.47
	Part XIII : Safe water to drink ...													0.28	0.13
	Part XIV : Sewage disposal network														0.28

Shaded cells are reported significant correlations at  $P < 0.05$  /or at  $P < 0.01$

Table (1) presents the simple correlation coefficients (Person's correlation coefficients). There are a various significant levels for the extracted correlation coefficients between the studied main parts responding and they are indicating a meaningful and significant interaction. The preceding results invite to searching for that significant interactions in order to creating or constructing the actual measurements scale for studying the phenomena of " **Construction of School Physical Environment standardized features tool**" and that could be achieved through applying the factor analysis technique and they are illustrated in table (2).

Figure (1) represents graphically two plots, first at the left side adverts the variance associated with each factor. It is used to determine how many factors should be kept. Typically the plot shows a distinct break between the steep slope of the large factors and the gradual trailing of the rest (the screen).

The second plot at the right side adverts the three-dimensional space loading plot of the first three factors. Plots display rotated solutions if rotation is requested orthogonal of applying (Varimax) method.

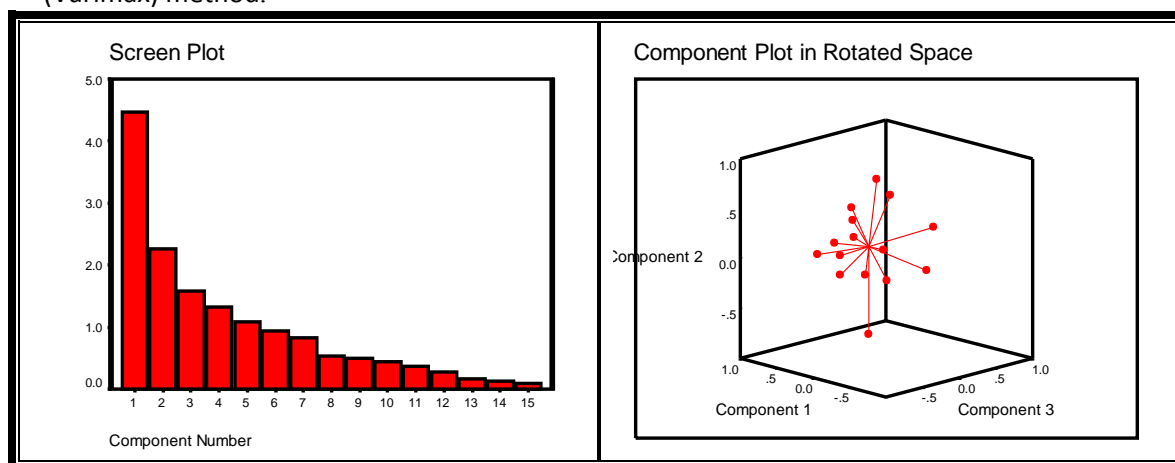


Figure (1): Screening Plot and Component Plot in Varimax rotated Space

Table 2. Extracted Factors matrix in Rotated method with the suggested named

Component Matrix	Components				
	One	Two	Three	Four	Five
Part I :The Surrounding Environment				-0.616	
Part II : The School					0.798
Part III :The School Yard					0.755
Part IV : Fire Extinguishers			0.661		
Part V : Classroom	0.821				
Part VI : Water cycle	0.858				
Part VII : Source of water	0.520				
Part VIII : First aid kit and pharmacy		0.529			
Part IX : Service Staff	0.842				
Part X : Antiseptics and disinfectants...		0.809			
Part XI : School Shop			0.829		
Part XII : Classroom Furniture	0.768				
Part XIII : Safe water to drink ...	0.703				
Part XIV : Sewage Disposal Network		-0.800			
Part XV : Accidents Prevention				0.786	
Initial Eigen values	4.470	2.256	1.582	1.325	1.092
% of covariance	29.801	15.043	10.545	8.831	7.279
Suggested Named	1	2	3	4	5

Table (2) is dealing with the studied parts which were extracted in five meaningful and significant interactions and which have suggestion named as follows:

1. School Services.
2. Emergency and School Sanitation.
3. Food and Protection services.
4. Safe School Environment.
5. School Environment.

That extracted Factors ordered in more powerful significant, with advantage at the first factor in (29.801%) of covariance constructed, then followed with advantage at the second factor in (15.043%) of covariance constructed, then followed with advantage at the third factor in (10.545%) of covariance constructed, then followed with advantage at the fourth factor in (8.831%) of covariance constructed, then finally followed with advantage at the fifth factor in (7.279%) of covariance constructed.

#### **Discussion:**

##### **Part I: Correlation, Extraction, and Rotation of the School's Physical Environment Factors**

Throughout the course of the data analysis, it has been realized that it is important to examine the relationships between the standardized features of the school's physical environment in order to determine the precise factors that may include the related features for the purpose of restructuring them as identities within each factor. The data analysis has depicted that the features are presented post their rearrangement under five factors that include school services, emergency and school sanitation, food and protection services, safe school environment, and school environment. So, the new model can be structured, tested and used as guide for new investigations (Tables 1 and 2; Figure 1). Such presentation of factors reflects the actual model by which the school's physical environment features can be considered as essential elements for future evaluation through the utilization of the constructed tool.

Supportive evidence for such findings is found in a survey of thirty-seven state primary schools located in the Isparta region of Turkey which are studied during the period between March and May of 2002. The results showed that all the schools of the region had a number of inadequacies because they had not been adequately adapted to comply with existing standards. The survey showed that local and central official bodies must reinforce the need for standards and ensure the implementation of high standards in the schools to ensure the pupil health, safety and security<sup>(4)</sup>.

#### **Recommendations:**

Based on the findings of the present study, we can recommend that:

1. The new discovered tool can be used as measure for future work.
2. Further studies can be carried out on large sample size and nation-wide base.

#### **References:**

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