## CONSTRUCTION AND STANDARDIZATION OF HIGHER SECONDARY STUDENTS' CHEMISTRY LEARNING ENVIRONMENT SCALE

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#### Abstract

The main aim of this study is to construct and standardize a tool for measuring the Chemistry Learning Environment. For the purpose of this study, Simple random sampling technique has been used to select the sample of this study. Among the schools as many as 200 first year higher secondary students have been randomly selected and used as subjects of this study. For this purpose the researcher referred journals and related literature and prepared as many as 65 statements pertaining to the Chemistry Learning Environment. These items have been classified under the following five dimensions: Student Cohesiveness, Class room Environment, Teacher Support, Personnel Participation, Student Centeredness, Laboratory Environment, Enjoyment of Chemistry Lessons and Home Environment. On the basis of the calculated 't' test value, the items which are above 1.75 have been selected and these formed final study. Totally 48 items were included in the final study.

#### Introduction

Effective teaching relies on facilitating environments conducive to learning. Although there are arguments about who should facilitate the learning environment (i.e., teacher or student

or shared), responsibility for teaching and learning in an education system rests with the teacher. Teachers will either organize a learning environment or facilitate students' organization of a learning environment. Organizing a science learning environment has reasonably open parameters as long as it falls within syllabus directions, school policies, health and safety constraints, and costs.

#### **Chemistry Learning Environment**

The complete makeup of the parts of the home or center and outdoors used for caring for children. The learning environment includes the space and how it is arranged and furnished, routines, materials and equipment, planned and unplanned activities, and the people who are present. Chemistry Learning Environment means the environment for the learning of Chemistry Subject.

#### **Chemistry Learning Environment Scale**

The main aim of this study is to construct and validate a tool for measuring the Chemistry Learning Environment. The total pattern of one's opinion to the different items reveals one's Chemistry Learning Environment. Chemistry Learning Environment scale refers to a device for securing answers to questions by using a form which the respondent fills in by himself. The first step in the construction of Chemistry Learning Environment scale is the collection of a large number of statements, both favorable and unfavorable to objects under study. According to Allen L. Edwards (1957), the following types of statements are avoided in an attitude scale:

- 1. Statements that refer to the past rather than the present
- 2. Statements those are factual or capable of being interpreted as factual.
- 3. Statements that can be interpreted in more than one way
- 4. Statements that are relevant to the psychological object under consideration
- 5. Statements those are likely to be endorsed by almost everyone or by almost none.
- 6. Statements that contain double negatives and statements those are rather long.

#### **Pilot Study**

For the purpose of this study, Simple random sampling technique has been used to select the sample of this study. Among the schools as many as 200 first year higher secondary students have been randomly selected and used as subjects of this study. The distribution of the sample has been given in Table No. 3.

For this purpose the researcher referred journals and related literature and prepared as many as 65 statements pertaining to the Chemistry Learning Environment.

These items have been classified under the following five dimensions:

- Student Cohesiveness
- Class room Environment
- Teacher Support
- Personnel Participation
- Student Centeredness
- Laboratory Environment
- Enjoyment of Chemistry Lessons
- Home Environment

On the basis of the calculated 't' test value, the items which are above 1.75 have been selected and these formed final study. Totally 48 items were included in the final study. This tool has been used for the data collection of the study.

#### Items analysis and Selection of the Items

The Scale thus constructed consists of 65 statements with options as SA-Strongly Agree, A-Agree, UD-Undecided, DA-Disagree, SDA-Strongly, Disagree. The scoring is 4, 3, 2, 1, 0 for positive statements and reverse for the Negative statements.

Table No.1

Items analysis and Selection of the Items

#	Statement No. in the Pilot Study	't'Value	Remarks
1.	1	2.70	Selected
2.	2	1.95	Selected
3.	3	1.85	Selected
4.	4	1.87	Selected
5.	5	1.56	Deleted
6.	6	3.85	Selected
7.	7	2.06	Selected
8.	8	2.83	Selected
9.	Bi -mor	<sup>2.61</sup> hiy Jo	Selected <b>na</b>
10.	10	2.18	Selected
11.	11	0.55	Deleted
12.	12	2.06	Selected
13.	13	2.54	Selected
14.	14	1.85	Selected
15.	15	4.23	Selected
16.	16	2.93	Selected

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		-	· · · · · · · · · · · · · · · · · · ·
17.	17	2.97	Selected
18.	18	1.49	Selected
19.	19	3.44	Selected
20.	20	2.27	Selected
21.	21	3.41	Selected
22.	22	2.20	Selected
23.	23	1.89	Selected
24.	24	1.97	Selected
25.	25	1.87	Selected
26.	26	3.09	Selected
27.	27	0.80	Deleted
28.	28	3.94	Selected
29.	<sup>29</sup> -mor	<b>10th North Constraints</b>	Deleted na
30.	30	2.13	Selected
31.	31	1.36	Deleted
32.	32	2.26	Selected
33.	33	2.39	Selected
34.	34	1.12	Deleted
35.	35	1.95	Selected
36.	36	0.44	Deleted
		1	

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37.	37	1.84	Selected
38.	38	2.91	Selected
39.	39	2.00	Selected
40.	40	.00	Deleted
41.	41	2.29	Selected
42.	42	1.09	Deleted
43.	43	1.98	Selected
44.	44	1.84	Selected
45.	45	2.29.	Selected
46.	46	0.62	Deleted
47.	47	0.00	Deleted
48.	48	2.24	Selected
49.	49 <b>1 - 11101</b>	1232111 <b>9 J</b> U	Selected
50.	50	1.78	Selected
51.	51	1.34	Deleted
52.	52	3.13	Selected
53.	53	2.24	Selected
54.	54	1.83	Selected
55.	55	1.92	Selected

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56.	56	0.23	Deleted	
57.	57	-0.08	Deleted	
58.	58	1.86	Selected	
59.	59	1.24	Deleted	
60.	60	3.45	Selected	
61.	61	1.82	Selected	
62.	62	1.63	Deleted	
63.	63	-0.94	Deleted	
64.	64	1.97	Selected	
65.	65	1.86	Selected	
Scoring Procedure				
48 val			Environment Scale has been prepared vesence of unfavourable Chemistry Learn	
Enviro	onment and the Score a	bove the mid value ind	licates the presence of favourable Chemi	
Learni	ng Environment.			
	C C			

### **Reliability and Validity of the tool**

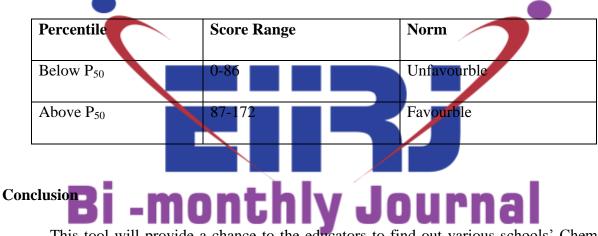
The Reliability of the Chemistry Learning Environment Scale was determined by Split-Half method. The scale was divided into two halves and each half was treated as a separate test. The reliability of the test by Split-half technique (consistency) followed by the use of Spearman-Brown Prophecy formula is found to be 0.89.

The content validity has been established by a panel of experts, faculty members from the Department of Education and Higher Secondary school Teachers. The Criterion validity has been calculated and the validity co-efficient was found to be 0.81. The Criterion related validity of the Inventory was found to be high.

#### **Percentile Norm**

Norms have been worked out for the Chemistry Learning Environment Scale. The Percentile norm in respect of the entire sample and its sub sample were computed for the Scale.

#### Table No. 2



Percentile Norm for Chemistry Learning Environment Scale

This tool will provide a chance to the educators to find out various schools' Chemistry learning environment and to modify them according to the needs of the students. Further by making use of this scale, pit falls in Chemistry Learning Environment also could be found out.

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