

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

T.Manickavasagan

Assistant Professor

Department of Education

Directorate of Distance Education

Annamalai University

Annamalai Nagar.

Dr.M.Soundararajan

Associate Professor

Department of Education

Annamalai University

Annamalai Nagar.

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

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.	9	2.61	Selected
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

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.	29	0.69	Deleted
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

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	2.32	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

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

The final version of the Chemistry Learning Environment Scale has been prepared with 48 valid items. Lower scores indicate that the presence of unfavourable Chemistry Learning Environment and the Score above the mid value indicates the presence of favourable Chemistry Learning Environment.

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

Percentile	Score Range	Norm
Below P ₅₀	0-86	Unfavourble
Above P ₅₀	87-172	Favourble

Conclusion

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.

References

- Edwards, L. Allen, (1957). Techniques of Attitude Inventory Construction. Vakils Feffer and Simons, Bombay.
- Barry J. Fraser (1998) Classroom Environment Instruments: Development, Validity And Applications, Learning Environments Research 1: 7-33.

Hofstein, Avi et al., (1996) The Learning Environment of High School Students in Chemistry and Biology Laboratories. Research in Science and Technological Education, v14 n1 p103-16.

Iyad Dkeidek, et al., (2012) Assessment of the laboratory learning environment in an inquiry-oriented chemistry laboratory in Arab and Jewish high schools in Israel, Learning Environments Research, Volume 15, Issue 2, 141-169.

