

AWARENESS OF BASIC PRINCIPLES OF CHEMISTRY AT COLLEGE STUDENTS

S.Murugan¹, Dr.G.Hema,²
< e-mail: smvmce@gmail.com >

¹ Ph.D. Scholar, Department of Education, Periyar University, Salem, TamilNadu, India.

² Assistant Professor, Department of Education, Periyar University, Salem, TamilNadu, India.

Ordinary knowledge is awareness of external facts; ordinary belief, conviction on inadequate grounds (Alfred R. Orage, 1998). This present study aims to find out the Awareness of basic concepts of chemistry at college students. Normative survey method is used in the present study. Sample consists of 172 Arts and Science college chemistry students selected using purposive sampling in Dhamapuri district. Chemistry Awareness Questionnaire (CAQ) developed by S.Murugan. The sample reliability is established by test re-test method by researcher. The correlation co-efficient is found to be 0.86. Descriptive and differential Analysis were used for analyzing the data. The result showing that the Arts and Science college chemistry students in the chemistry awareness is high.

Keyword: Awareness, Chemistry and College Students

Introduction

Science is an integral part of culture. It's not this foreign thing, done by an arcane priesthood. It's one of the glories of the human intellectual tradition (Stephen Jay Gould, 1990). The real value of science is in the getting, and those who have tasted the pleasure of discovery alone know what science is. A problem solved is dead. A world without problems to be solved would be devoid of science (Frederick Soddy, 1912). Science, however, is never conducted as a popularity contest, but instead advances through testable, reproducible, and falsifiable theories (Michio Kaku, 2014).

Chemistry is the "scientific study of matter, its properties, and interactions with other matter and with energy".

Every aspect of the world today – even politics and international relations – is affected by chemistry (Linus Pauling, 1994). Chemistry is necessarily an experimental science: its conclusions are drawn from data, and its principles supported by evidence from facts (Michael Faraday, 1867).

Awareness can be defined as what is manifest in all forms of perception, in all forms of knowing. Awareness is qualified by different objects. Awareness is state of elementary or undifferentiated consciousness.

Review of Related Literature

Haley, Rebecca A. et al. (2018). Conducted a study on Green chemistry and sustainability have garnered more awareness in the chemical industry in recent years, but green chemistry classes are still not commonplace for either the undergraduate or graduate student curriculum. The goals for the course included education in the basics of green chemistry (history, metrics, methodologies) along with opportunities to apply what they have learned and communicate it to a general audience. This process of developing modules and assessments for the discovery and application of green chemistry principles has enabled a supplementary education for the graduate students as well. Herein, the specific motivations of the graduate students to design the course, how green chemistry was presented to students in an online format, and how students responded to this type of class are provided.

Yilmaz, Nihal Yildiz. (2019). studied on to examine the relationship between primary school students' environmental awareness and basic science process skills based on various variances. Within relational research model, the research was conducted with 332 grade 3 and 4 students. Primary School Environmental Awareness Scale and Basic Skills Scale were used to collect data. A significant difference between the total scores of life in nature and environmental awareness scale was observed in favor of female students. Any significant difference was not found between sub dimensions and total scores of environmental awareness over class level. The type of school significantly impacted their basic science process skills and level of environmental awareness. The differences which were found were in favor of private schools for both scales.

Objectives of the Study

- ❖ To identify the level of awareness of basic principles of chemistry at under graduate chemistry students
- ❖ To find out the awareness of basic principles of chemistry at under graduate chemistry students with respect to gender, locale, type of institution and year of students

Hypothesis of the Study

- ❖ There is no significant difference between the mean scores of male and female under graduate chemistry students in their chemistry awareness
- ❖ There is no significant difference between the mean scores of rural and urban under graduate chemistry students in their chemistry awareness
- ❖ There is no significant difference between the mean scores of Government and Private under graduate chemistry students in their chemistry awareness
- ❖ There is no significant difference between the mean scores of chemistry awareness of under graduate chemistry students with regards to year of students

Methodology

The researcher pursued the normative survey method for the present study.

Sample for the Study

The sample for the study consisted of 172 under graduate chemistry students from various arts and Science College at Dharmapuri district in Tamil Nadu. The sample is selected through convenient sampling technique.

Tool for the Study

Chemistry awareness questionnaire (45 items) developed by S.Murugan (2018) is used to identify the chemistry awareness of under graduate chemistry students. The sample reliability was established by test re-test method, which shows a correlation co-efficient of 0.86.

Statistical Techniques

- Descriptive Analysis
- Differential Analysis

DATA ANALYSIS AND INTERPRETATION

DESCRIPTIVE ANALYSIS

TABLE – 1

Showing Mean and Standard Deviation of graduate chemistry students in their chemistry awareness.

Variable	N	Mean	SD	Max. Score
Chemistry Awareness	172	33.40	5.53	45

From the table 1 it is found that mean of total graduate chemistry students is 33.40 standard deviation of 5.53. It is observed that an individual can score a maximum of 45. In comparison with the maximum score, it is found that the obtained mean score is 74.22% of the maximum score, which means the graduate chemistry students have high level of chemistry awareness.

DIFFERENTIAL ANALYSIS

Hypothesis – 1

There is no significant difference between the mean scores of male and female under graduate chemistry students in their chemistry awareness.

TABLE - 2

Showing Mean and Standard Deviation of male and female under graduate chemistry students in their chemistry awareness

Max. Score: 45

Group	N	Mean	SD	't' Value	p Value
Male	62	31.37	5.12	3.736	0.000
Female	110	34.54	5.45		

From the above table 2 the calculated 't' value is found to be 3.736 which is greater than table value at 0.05 level of significance. Hence the null hypothesis is rejected. Therefore it is concluded that there is significant difference between the mean scores of male and female under graduate chemistry students in their chemistry awareness.

Hypothesis – 2

There is no significant difference between the mean scores of rural and urban under graduate chemistry students in their chemistry awareness.

TABLE - 3

Showing Mean and Standard Deviation of rural and urban under graduate chemistry students in their chemistry awareness

Max. Score: 45

Group	N	Mean	SD	't' Value	p Value
Rural	119	31.61	5.37	7.211	0.000
Urban	53	37.40	3.42		

From the table 3 the computed 't' value is 7.211 which is greater than table value at 0.05 level of significance. Hence the null hypothesis is rejected. Therefore it is concluded that there is significant difference between the mean scores of rural and urban under graduate chemistry students in their chemistry awareness.

Hypothesis – 3

There is no significant difference between the mean scores of Government and Private under graduate chemistry students in their chemistry awareness.

TABLE - 4

Showing Mean and Standard Deviation of Government and Private under graduate chemistry students in their chemistry awareness

Max. Score: 45

Group	N	Mean	SD	't' Value	p Value
Government	125	34.08	5.52	2.695	0.008
Private	47	31.57	5.19		

It is noted from the above table 4 that the obtained 't' value is 2.695 which is greater than the table value of significant at 0.05 level. Hence the null hypothesis is rejected. Since, Government College under graduate chemistry students are more influence than Private College under graduate chemistry students.

Hypothesis – 4

There is no significant difference between the mean scores of chemistry awareness of under graduate chemistry students with regards to year of students

TABLE - 5

The differential statistics ANOVA shows the Sum of square, df, Mean Square, F value and P value of year of students of under graduate chemistry students in their chemistry awareness.

Max. Score: 45

Type of Institution	Sum of square	Df	Mean Square	F Value	P Value
Between Group	1175.342	2	587.671	24.464	0.000
Within Group	4059.774	169	24.022		
Total	5235.116	171			

*significant at 0.05% level

The calculated F – value (24.464), which is significant at 0.05 level, confirms that there is no significant difference between the mean scores of chemistry awareness of under graduate chemistry students with respect to year of students. Hence the stated hypothesis is rejected.

POST HOC TEST (SCHEFFE)

Year of Students	N	Subset for alpha = 0.05	
		1	2
I Year	64	31.17	
II Year	59	32.44	37.45
III Year	49		52.14
Significance		.389	1.000

The Scheffe Post Hoc Test result shows that among the I year (31.17), II year (32.44) and III year (52.14) under graduate chemistry students, III year under graduate chemistry students are better in their chemistry awareness.

Findings of the Study

- ❖ The mean score of the graduate chemistry students have high level of chemistry awareness.

- ❖ It is inferred that there is significant difference between the mean scores of male and female under graduate chemistry students in their chemistry awareness. Since, female under graduate chemistry students are better than male under graduate chemistry students.
- ❖ It is observed that there is significant difference between the mean scores of rural and urban under graduate chemistry students in their chemistry awareness. Since, urban under graduate chemistry students are more influence than rural under graduate chemistry students.
- ❖ It is found that there is significant difference between the mean scores of Government and Private under graduate chemistry students in their chemistry awareness. Since, Government College under graduate chemistry students are more influence than Private College under graduate chemistry students.
- ❖ It is observed that there is significant difference between the mean scores of chemistry awareness of under graduate chemistry students with regards to year of students.

Reference

- Haley, Rebecca A. et al. (2018). Graduate Student Designed and Delivered: An Upper-Level Online Course for Undergraduates in Green Chemistry and Sustainability. *Journal of Chemical Education*, 95(4), 560-569.
- Yilmaz, Nihal Yildiz. (2019). An Examination of the Relationship between Primary School Students' Environmental Awareness and Basic Science Process Skills. *Educational Research and Reviews*, 14(4), 140-151.
- Brooks, H. (1967). Applied science and technological progress. *Science*, 156, 1706-1712.
- Cochran. W.G. (1983). *Planning and analysis of observational studies*. New York: Wiley.
- Cronbach, L.J. (1975). Beyond the two disciplines of scientific psychology. *American Psychologist*, 30, 671-684.
- Dewey, J. (1929). *The sources of a science of education*. New York: Livewright.