Jai Maa Saraswati Gyandayini ISSN: 2454-8367
An International Multidisciplinary e-Journal
(Peer Reviewed & Opened Access Indexed)
Web: www.jmsjournals.in Email: jmsjournal.in@gmail.com
Vol. 1, Issue-III
Jan. 2016

AWARENESS OF SAFETY MEASURES IN CHEMISTRY LABORATORY AND INTEREST IN CHEMISTRY PRACTICAL AMONG XI STANDARD STUDENTS

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ABSTRACT

The purpose of the present investigation was to study the relationship among safety measures in chemistry laboratory and interest in chemistry practical with reference to some selected variables like gender, area of residence and medium of instruction. There exists positive relationship between these two variables safety measures in chemistry laboratory and interest in chemistry practical.

Key Words: *safety measures in chemistry laboratory and interest in chemistry practical*

INTRODUCTION

Chemistry plays an important role in modern life, especially in many industrial activities. The psychological moment to explain a subject; especially chemistry laboratory is when the children's experiences and interests are related to each other. "It is well to remember that the attention span is very short, especially in young children. The only thing that will bridge the gap is interest and enthusiasm. Interest may exist to some extent on the part of the pupil; more likely it needs to be artfully created by the teacher. Capitalizing on natural interests and cultivating new ones is the mark of a good educational programme. Intrinsic interest must be achieved. Interest is created by the acquisition of new skills, by encouragement and above all by satisfying experience. The wise teacher will take advantage of the slightest show of interest. The best time to explain a subject is when it is

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presented to an inquiring mind, when the child asks question. This is the true pedagogical moment; it is better than the "logical" moment according to the lesson plan".

REVIEW OF RELATED LITERATURE

Wargniez (2013) done a research on "Improving laboratory safety through mini-scale experiments". A sample of 240 stakeholders in a small teaching laboratory. Promoting safety in teaching laboratories requires an integrated approach that recognizes the importance of stakeholders' commitment, use of cost-effective and environmentally friendly experiments and proper implementation management. The results indicated the importance of stakeholders' active involvement, organizational commitment and they discuss the factors and indicators influencing the successful implementation of mini-scale experiments in improving the safety culture in a small teaching laboratory institution. **Donna Ritch (2013)** examined "Chemistry laboratory and safety knowledge in the science curriculum". Samples of 290 higher secondary school students were taken. The results of the survey showed a significant increase in the amount of safety knowledge gained when students are exposed to chemistry laboratory and are held accountable for learning the information as is required in our Laboratory Safety course. **Linder (2013)** conducted a study on, "Graduate student fellowship program on middle school student's attitude toward science and their interest in science". Using a descriptive and correlation research design, data were collected from 588 middle school students. Participants completed a pretest and a posttest questionnaire on their attitude and interest in science. Findings showed that participants overall had a positive attitude toward science and their interest in science. **Moniebnn (2012)** pointed out a study on, "Distribution of interest between science and Non-science subject among high school pupil with special reference to sex difference". The number of school chosen was eight and the number of pupil examined were 935, four from the urban and four from the rural areas. The investigation was done in schools in Madras city and Kerala. Findings showed that the pupil in high school classes are more interested in science than in the all other school subjects. There seems to be definite difference in the interest of boys and girls in the study of science. The range of interest of girls seems to be greater than that of boys.

RATIONALE

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Today we are living in space age due to sustained efforts of man and this lead to the development of science and technology. Chemistry is the basic form of science whose importance is shrouded all over the globe. In modern times, chemistry is one of the major branches of substance making up the universe namely sea, air and land. The younger generation is in a crucial period and facing many environmental problems like global warming, environmental pollution due to ozone depletion, spread of new diseases etc. Hence the younger generation should be motivated to learn about eco-friendly chemicals and solve the pollution problems to have peace for a healthy and happy atmosphere. Students must be encouraged to learn chemistry they come across in their lives.The skills learnt by them will help them in their future when they become a teacher, research scholar, laboratory technician and doctor. Thus chemistry is an important part of our life and the future of our planet. Emphasizing the significance of learning chemistry at higher secondary level is important and imperative. There is an urgent need to identify the attitude of the students towards learning chemistry and fill the gap or vacuum, in any, by applying possible teaching and learning measures, to create interest in learning chemistry. So the researcher felt the need to find out whether there is any relationship between Awareness of safety measures in chemistry laboratory and interest in chemistry practical among XI standard students.

OBJECTIVES OF THE STUDY

- To find out the level of awareness of safety measures in chemistry laboratory and chemistry practical among XI standard students.
- To find out the difference in awareness of safety measures in chemistry laboratory and chemistry practical among XI standard students based on Gender, Medium of Instruction and Area of Residence.
- To find out the relationship between awareness of safety measures in chemistry laboratory and the interest in chemistry practical among XI standard students.

HYPOTHESES OF THE STUDY

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1. There is a high level of awareness of safety measures in chemistry laboratory and interest in chemistry practical among XI standard students.

2. Boys and girls do not differ significantly in their

    a) Awareness of safety measures in chemistry laboratory
    b) Interest in chemistry practical

3. Students belonging to rural and urban area do not differ significantly in their

    a) Awareness of safety measures in chemistry laboratory
    b) Interest in chemistry practical

4. Students belonging to different medium of instruction do not differ significantly in their

    a) Awareness of safety measures in chemistry laboratory
    b) Interest in chemistry practical

5. There is no significant relationship between awareness of safety measures in chemistry laboratory and interest in chemistry practical among XI standard students.

METHOD OF THE STUDY

The present study utilizes the normative method. Data was collected from the XI standard students using random sampling method. The total sample size was 300 and 6 schools were selected for the present study belonging to different types of school like government, government aided and private schools.

TOOLS USED

1. Awareness of safety measures in chemistry laboratory questionnaire
2. Interest in chemistry practical questionnaire

ANALYSIS AND INTERPRETATION OF THE DATA

HYPOTHESIS 1:

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There is a high level of awareness of safety measures in chemistry laboratory and interest in chemistry practical among XI standard students.

Variable	Category	Frequency	Percentage
Awareness of safety measures in chemistry laboratory	Low	77	25.7
	Moderate	164	54.7
	High	59	19.7
Interest in chemistry practical	Low	82	27.3
	Moderate	133	44.3
	High	85	28.3

It is observed that out of 300 samples, 54.7% of the samples have moderate level of awareness of safety measures in chemistry laboratory. Hence, most of the students have moderate level of awareness of safety measures in chemistry laboratory. It is observed that out of 300 samples, 44.3% of the samples have moderate level of interest in chemistry practical. Hence, most of the students have moderate level of interest in chemistry practical.

HYPOTHESIS: 2

Boys and Girls do not differ significantly in their awareness of safety measures in chemistry laboratory and Interest in chemistry practical.

Variables	Gender	N	Mean	S.D	't' value	LS
Awareness of safety measures in chemistry laboratory	Male	160	27.42	3.604	5.447	S**
	Female	140	29.24	1.720		
Interest in chemistry practical	Male	160	25.71	6.442	4.515	S**
	Female	140	28.64	4.498		

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It is observed that the mean score of awareness of safety measures in chemistry laboratory of female students (29.24) is greater than that of male students (27.42). Thus, boys and girls differ significantly in their awareness of safety measures in chemistry laboratory. It is observed that the mean score of interest in chemistry practical of female students (28.64) is greater than that of male students (25.71). Thus, boys and girls differ significantly in their interest in chemistry laboratory.

HYPOTHESIS: 3

Students belonging to rural and urban area do not differ significantly in their awareness of safety measures in chemistry laboratory and Interest in chemistry practical.

Variables	Locality	N	Mean	S.D	't' value	LS
Awareness of safety measures in chemistry laboratory	Rural	67	26.90	4.142	4.345	S**
	Urban	233	28.66	2.481		
Interest in chemistry practical	Rural	67	25.61	6.152	2.364	S*
	Urban	233	27.50	5.637		

It is observed that the mean score of awareness of safety measures in chemistry laboratory of urban students (28.66) is greater than that of rural students (26.90). Thus, students belonging to rural and urban area differ significantly in their awareness of safety measures in chemistry laboratory. It is observed that the mean score of interest in chemistry practical of urban students (27.50) is greater than that of rural students (25.61). Thus, students belonging to rural and urban area differ significantly in their interest in chemistry practical.

HYPOTHESIS: 4

Students belonging to different medium of instruction do not differ significantly in their awareness of safety measures in chemistry laboratory and Interest in chemistry practical.

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Variables	Medium	N	Mean	S.D	't' value	LS
Awareness of safety measures in chemistry laboratory	Tamil	190	27.97	3.182	2.265	S*
	English	110	28.78	2.645		
Interest in chemistry practical	Tamil	190	27.28	5.891	.794	N S
	English	110	26.73	5.647		

It is observed that the mean score of awareness of safety measures in chemistry laboratory of English medium students (28.78) is greater than that of Tamil medium students (27.97). Thus students belonging to different medium of instruction differ significantly in their awareness of safety measures in chemistry laboratory. It is observed that the mean score of interest in chemistry practical of Tamil medium students (27.28) is greater than that of English medium school students (27.97). Thus, students belonging to different medium of instruction do not differ significantly in their interest in chemistry practical.

HYPOTHESIS: 5

There is no significant relationship between awareness of safety measures in chemistry laboratory and interest in chemistry practical of XI standard students.

Variables	Sample	'r' value	LS
Awareness of safety measures in chemistry laboratory	300	0.435	S
Interest in chemistry practical			

It is observed that the 'r' value of the awareness of safety measures in chemistry laboratory and interest in chemistry practical of students is 0.435. It denotes that there exists positive relationship between these two variables.

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DISCUSSIONS

- Girls have more awareness of safety measures in chemistry laboratory and interest in chemistry practical when compared to boys. Because girls usually have more level of logical thinking than the boys. Girls are very interesting in performing new things.

- Urban school students have more awareness of safety measures in chemistry laboratory and interest in chemistry practical when compared to rural school students. Because they have got greater exposure to do practical than the rural students.
- Based on the findings there is a significant difference in awareness of safety measures among XI standard students based on medium of instruction. English medium students have more awareness of safety measures when compare to Tamil medium students. Because English medium students learn faster as they have the power of language from internet, books etc., and they learn more awareness of safety measures in chemistry laboratory.

- Based on the findings there is no significant difference in interest among XI standard students based on medium of instruction. Tamil medium students have more interest in chemistry practical when compared to English medium students. Because they are new to the atmosphere and they want to learn more about the subject. So they show high level of interest in chemistry practical.

EDUCATIONAL IMPLICATIONS

- By conducting demo classes and practical classes more frequently in the schools may increase interest among students.
- More practical syllabus must be included in the curriculum, so that the students may develop knowledge and practical skills.
- Individual experiments to students must be given rather than group practical. So that each and every students develop practical skill and interest in the chemistry practical.

- Work-shops, exhibitions, mini projects can be allotted to the students.
- While doing practical it must be connected to day-to-day life. So that students develop an interest in the chemistry practical.
- Safety plays a major role in chemistry laboratories
- Chemical laboratories must provide safe working environment for those who are working in it.
- The first step in the safety inside the laboratories is the person who is going to conduct or demonstrate the practical should have clear and thorough knowledge about the subject.
- A clear protocol of each and every practical should be maintained inside the laboratory.
- The lab must be highly sophisticated with all facilities particularly water, drainage and electricity.
- Proper storage of chemicals with labels should be maintained.
- A first aid box should always be maintained inside the laboratory.

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