

Study on Science Laboratories of Government Colleges of Sindh Province

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Abstract

The success of any nation depends very largely upon its advancement in science and technology. For the development of scientific approach among students, science laboratories play pivotal role. So, the ongoing study was conducted to investigate the status-co of science laboratories working at government Intermediate collages in District Hyderabad. The descriptive type of research was used for this study and followed by survey methods. For the purpose of data collection, a close-ended questionnaire was developed on the pattern of Five Point Scale the systematic random sampling was used to draw the sample sizes from the population. The same questionnaires were administered to each size i.e. Lecturers, Students and Lab. Attendants/ In charges. Data reveals that in most of government colleges possessed their own separate laborites for chemistry, physics and biology. The shortage of consumable and non-consumable item was observed. In nut shell, the science Laboratories in Government Intermediate Colleges are not working effectively. In this way the quality of education is in science subjects are at alarm.

Keywords: Government, effectively, Education, methods, research

Introduction

The Intermediate Colleges students experienced the complicated theories, new vocabulary, complex diagram, new concepts and novel techniques when induced in science education. It is fact that science courses are taught in foreign (English) language. In Pakistan, the students were supposed to learn the foreign language to understand the science courses. The curriculum of science consists of scientific techniques, theories formula, self-assessing exercises and scientific explanations. These all in foreign language. The student focus to learnt the reginal language and foreign language in order to discuss with teachers, peers and parents as well as to secure the marks in examination. The low brain power students were rote memorization.

For Science teaching various teaching methods like project-based method, discovery method and Expeditionary Learning were mostly practiced in secondary and higher secondary levels. The laboratory studies are essential to develop the concepts and gradually root in brains (Hughes and

Overton, 2008). Since last three decades the science was taught by inquiry method. In this method the students were motivated to explore the things. That is why it is mandatory to follow the classroom teaching and laboratories study. By this the concept of learning were clearer and concert. (Handelsman, 2004). The laboratory experiment was enabling the learner to unfold other aspects of object. The critical thinking developed. The learner logically reasons.

The point of ponder is the laboratory studied not only create the fascinating environment to the learner. This creates the interactive study. The learner should inquire and unfold the facts. It generates the ability to think in right direction and logical. The individual laboratory study boosted the self-inquiry of learner. The learner can be more focus and can learnt at his own pace. Sometimes learning goal achieved more effectively then group study. Mostly in the student's overrash laborites the small groups formulated to perform the practical. The group learning would build the friendly relation among the peers. It motivated the learner to understand, to learn and to achieve. The competitive environment would expedite the learning process. The academic learning would be high consequently the critical thinking would be enhanced. The learner should be able to observe the facts in multidimensional aspects. The curiosity of students would generate technical skills. The drawback was the teacher and students sometimes deviate from central idea thereby missing learning goals. (Gunstone, 1991)

The achieving outcomes through laborites studies promote the well understanding of concepts, subject materials, technical skills, the scientific techniques and methodologies. The students should be able to scientific reasoning and would be familiar the scientific research. It is preferable that laboratory study would be relevant to curriculum. This provide the knowledge, the basic concept of subject the demonstration would strengthen more and learning goal achieved. It is necessary to make the awareness about the basic and compulsory methods and practices carried out in laboratories as safety, ecology and hygiene. The handling and dismantling of equipment and instruments. Their operating conditions and specification. The handling and storage of chemicals. The nature of laboratory chemical as toxic, hazardous, combustible or inflammable or other. Their charging and discharging during experiment. The use of personal protective equipment in laboratory as lab coat, goggles and hand gloves etc. The glassware is fragile, its washing, rinsing and use. The basic tactics of review of literature in order to aware about the scope and method of experiment. The data collection and its interpretation by applying suitable computer-based software or suitable statistical methods. The validity of data, recommendation and further aspects of research. The use of various physical methods, analytical tools and manual approach. The students learn the real science.

The teachers teaching science practicing various teaching tools. The foremost method is expository method. This is partial interactive method. The teacher delivers the lecture Infront of students. Here the students are less active. All the information presented in organized way. The knowledge delivered in accurate, brief, correct and comprehensive way. The students memorized easily (Schussler et al., 2013). This produce the spoon- fed habit. Resulting the native capability ruin. The easily accessible course material tends to diminishing the curiosity of leaner.

The deep understanding of subject would not observe in this method. Even the students disable to design biological experiment. They totally unable to demonstrate their projects correctly.

The other method is inquiry-based laboratory. This method is comparatively more suitable because mutual involvement of students and teachers in class room. This method is much similar to

problem-based learning in which the complex real problems are unfold by means of presenting real objects in order to explore the facts and figures (Nowrouzian and Farewell, 2013).

The theory of Constructivism process based on scientific knowledge and observation. Through collaborative or individual context, the learner allowed to construct and reconstruct their projects or experiment by self. In previous frame work of knowledge the new knowledge is contextualized. Resulting the better knowledge, storage and recall observed. (Dolmans et al., 2005). There can be no two opinions that youth are real worth of the nation, capable to transform the country. They are real engine to rail the country towards the progress and prosperity. This all possible when they should be properly educated, skilled and trained. Otherwise, they derail our society. Mostly youngers registered in college education.

The Government of Pakistan enforced the condition of science laboratory in all Government and Private collages. The science laboratory should be well equipped with respect to science curriculum. Also, should be built separately for Biology, Physics and Chemistry in order to build up the conceptual framework in fresh brains. The Biology, Physics and Chemistry are career building subjects. All the science laboratories should be properly developed along with all necessities including the calibrated equipment, glassware, dissection boxes, chemicals, microscope, optical instrument and etc. In nut shell availability of consumable and non-consumable items should be ensured.

Research Methodology

This research followed the procedure given below:

Type of Research: The study deals with descriptive type of research by using the survey methods.

Population: The district Hyderabad has fifty intermediate Government Colleges and its jurisdiction where is thirty-two are Government Boys intermediate Colleges and eighteen are Government Girls Intermediate colleges so, all the Government intermediate colleges was considered as population of the study.

Sample and Sampling: For the purpose of sampling systematic random sampling was used to draw the sample from the population as given below:

Table 1.1: Showing the population and sample size of the Study

Population	Sample			
	Collages	Lecturers	Students	Lab.Attdt
50	4	16	120	8
Intermediate colleges	4	16	120	8
Total	8	32	240	16

Data Analyses: For the purpose of Data Analyses, the collected data from questionnaire was assessed Quantitatively by using the Techniques of Inferential Statistic.

Results and Discussion

The part of questioner was the about the existence of science laboratories in Government collages. The researcher inquired about the separate labs for each subject. The information were collected from students, teachers and lab attendants (Fig 1.1).

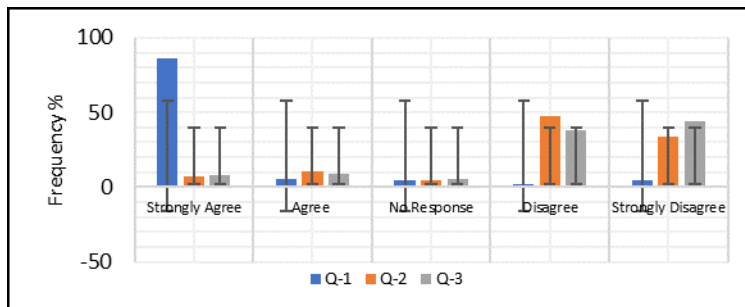


Fig 1.1: The Frequency % of Students (Boys and Girls). The vertical line shows the standard deviation

The 237 students participated out of 240. The 198 students reported that in their collages the separate labs existed for science subjects. The 86.46 % confirmed while 4.58% reported that in their collages there were no any separate laboratories. Though it was mandatory to establish the laboratories for teaching the science subjects. But compliance not given to Government policies. The over crowded class usually the noisy class. The teacher not delivered the lecture appropriately nor individual attention paid to students. As every individual is different. The learning capabilities varies person to person. The social and educational background also effects in classroom management. That why a it was tried to unfold the effect of students' strength on learning process. The 7.39% were satisfied that student strength were not high and they achieve their academic goals. The 33.91% very strong protested that due to high strength the class room was fully suffocated and over rushed. Even unable to get seats in classroom. The 47.81% students second their complain. The collages in thickly populated areas content the greater student's registration. The third indicator was the lab facilities as microscope, dissection box, disinfectant, chemicals, glass ware, instrument and equipment. This was very important aspects of teaching science. The students reported that there were not appropriate facilities in their labs. The 101 strong delivered their observation. The 87 students second mild tone delivered the same. Total 228 students were participated in survey.

To confirm the reliability of research, work the same questions were asked from Lecturers. From 8 collages 32 lecturer were registered. The 69% teachers conformed that they have science laboratories. Only the 11.54% collage teachers reported that in their concerned collages no space was reserved for science laboratories. So they were unable to proceed the laboratories study. (Fig 1.2).

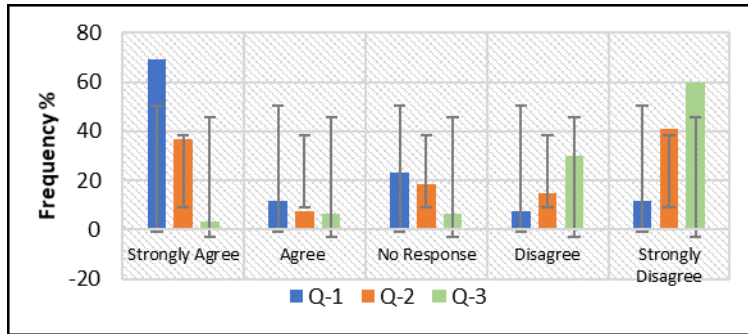


Fig 1.2: The Frequency % of Teachers (male and female). The vertical line shows the standard deviation

The student strength plays important role in class management. The teaching load increases when the strength is high. The high student strength makes the hurdles in transforming the knowledge. In over rush classes the learning goals cannot be achieved easily. In this research the mixed mode answers were received. The 10 teachers were satisfied that student strength is manageable and acceptable in their schools. While 11 were answered completely reciprocal. The 5 teachers not responded. The narrow boundaries of opinion appeared.

The laboratory facility was big issue in collages. The 60% teachers were clearly reported that lab facilities were not up to mark. The Government should take the step to furnish the science lab. The lab facilities not sufficient to conduct the practical in proper manner. The consumable item shortage always remained. That why students suffer. There was no any running budget spend to purchase the consumable item or broken and missing part of accessories. It was noted that the 30% teacher raised same reservations in other manner.

In this research the lab attendant were also under study. The lab attendants are the helpers who facilitate the teacher during lab hours. They involved in cleaning and maintaining of laboratories. There were 16 lab attendants from 8 collages of Hyderabad. The 12-lab attendant reported that science lab was in their collages. Only 2 were denied.

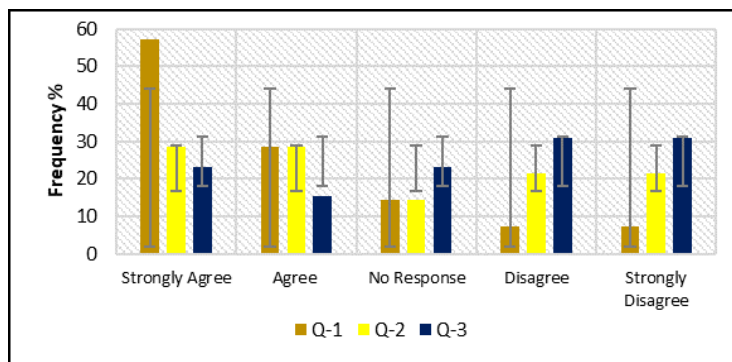


Fig 1.3 The Frequency % of Lab Attendant (male and female). The vertical line shows the standard deviation

About the student strength the mixed answer was received 4 reported that student strength was sufficient to lab facility. The 3-lab attendant contra this point. About the lab facility there were no any clear opinion were obtained. 3 Lab attendants not replied and 3 said labs not standardized. it was extracted that almost all Government Collages possessed their own science laboratories.

Conclusion

But most of them were not fully effective. There was no any plan run for maintenance science laboratories. From establishment of collages the same mostly the stuff used till today. In case of any breakage, deteriorate or damage the long procedure and written exercise were perused. The consumable item mostly supplied in short quantity. That why students unable to perform their practical repeatably.

The physical environment of labs was not comfortable. In warm weather there is no human comfort system there. It is recommended that regular supply of item should be ensured. The teachers should be bound to perform their lab teaching assignment well.

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