Factors Influencing Achievement in Science at Secondary Level

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1. Introduction

In this study aimed at studying factors influencing achievement in science at secondary school level, the investigator found that gender of the students had no significant relationship with the achievement in science. Science is an approach of gathering knowledge rather than only a field of discipline. Science is the human activity that man has created to gratify certain human needs. The great value of science is that it has introduced us to new ways of thinking and reasoning. Huxley's statement that science thinking is "organized common sense" is applicable to all the life situation. It is quite obvious that study of science has given us real insight of ourselves and the things around us. It sharpens our intellect and makes us intelligent, honest, and a critical observer with genuine reasoning.

The development of theory is the primary function of science. Use of theory gives rise to multiple technologies. Role of science is very important; that is why all the sectors concerned are keenly interested in the development of science. Science has a significant place in secondary school curriculum. Quality of science education has made significant changes in the complete education system.

People today are faced with an increasingly fast-changing world where most important skills are flexibility, innovation and creativity. Good science education is true to the child, true to the life and true to the science. At secondary stage, student should be engaged in learning science as a composite discipline, in working with hands and tools. Various studies suggest that achievement in science is related to the variables like home, school and teacher. Student's participation in different school activity and extracurricular activities affects their achievement in science.

2. Review of Literature

In recent years, there are various studies related o the effect of sex on the achievement in science and visible differences among them. Some studies are in favor of boys and some are in favor of girls. O'Connor (2001) reported that boys achieve better marks in achievement test in science than girls. Contrary to this, Mohpatta and Mishra (2000) rejected the effect of gender on achievement in science. Thas and Naval (2001) reported that girls outperform boys. The effect of the families' educational environment can be rated by the help parents solicit to their wards. Emperical studies suggest that home environment plays an important role in learning (Welberg 1991). Schiefelbaum and Simmons (cited by Adell, 2002) consider that the family background is the determining factor of academic performance. Rodri Guez (1986) demonstrated that a positive family climate favors the development of well adopted, mature, stable and integrated personality.

Moriana et.al. (2006). Indicated that group-involved activities outside the school yields better academic performance. Papanastasion and Ferdig (2003) assessed that the students who have access to computers in their home or in their classrooms would do better in Science and Mathematics achievement than those who had not. Empirical studies suggested that personal factors (Gender, Family Background, and Extracurricular Activities) access and non-access to computer and Internet and institutional factors have significant effect on achievement in science.

3. Methodology

The researcher had adopted survey method for research.

3.1 Sample

The secondary school students (Standard IX) of Deoria and Gorakhpur district were the population of the study. The sample for the study comprised five hundred secondary school students selected from 20 schools of urban and rural areas. 270 students were boys and 230 were girls. Out of 270 male students, 130 were from rural schools while 140 were from urban schools. Out of 230 girls, 280 girls were from urban schools and 150 girls were from rural schools.

4. Objectives

Following were the objectives of the study

1. To study the effect of personal dimensions that is sex, socioeconomic status, co-curricular activities, computer facility and access to Internet on achievement in science.
2. To study the effect of educational facilities that is access to computer, laboratory facility and focused care (tutorial classes and coaching facilities) on achievement in science.

5. Tools Used

The researcher had used following self-made tools for data collection.

1.Test of Achievement in Science

This test consists of 50 items of multiple-choice type each of one mark. Out of 50 questions, 25 questions were from physical sciences and 25 questions from biological science. Reliability of the test was calculated by split-half method. The reliability of the test was 0.73.

2.Socio-Economic status Questionnaire

This questionnaire consists of 12 questions. Questions 1 and 2 were concerned with monetary status and educational qualification of the family. Questions 3 and 4 were concerned with availability of personal library and access to magazine and chronicles. Questions 5 and 6 were based on household items. Questions 7 to 11 sought information about social, educational and economic background of neighbors, size of the family etc. Question 12 was related to type of residence.

3.Personal Information Sheet

This sheet consisted of questions related to personal aspects of the Students such as gender, co-curricular activities computer facility and access to Internet.

6. Result and Discussion

Results revealed no significant difference in Mean achievement score of male and female students in urban and rural areas (Table 1 and 2). Children of higher socio-economic status scored significantly higher in science achievement test in both locales. No significant difference in achievement score was observed between rural students who participated in extracurricular activities and those who did not. In contrast, the urban students who participated in co-curricular activities achieved significantly higher score in science achievement test.

Remarkable difference was visible in access to computer between rural and urban students. 63 students had access to computer and 217 had no access to computer in rural areas. In contrast, 236 students had access to computer and 84 students had no access to computer in urban areas. Access to the facility of Internet showed a similar trend of availability in rural and urban locale. 84 students had access to Internet facility and 196 had no access to the Internet facility in rural area whereas 150 students had access to Internet and 170 students had no access to Internet in urban area.

Result indicated no significant difference in science achievement score of boy and girls residing in rural and urban areas. Several studies revealed contrary finding that female students achieve better score in science courses. Urban students showed higher Mean achievement score than rural students. Locality

and advanced facilities of information technology, better school facility and enriched environment gave additional privilege to urban students that converted into better achievement score.

Further, results indicated higher achievement score in science of higher socioeconomic status students. Rural and urban students showed similar trend in higher socioeconomic status category. Students from family of lower SES had significantly lower achievement in science. Family environment and educational activities effected the achievement in science positively.

Results indicated insignificant difference in Mean achievement score of the groups participated/not participated in co-curricular activities in rural students. Urban students showed significant difference. The students who participated in co-curricular activities development better self concept and higher level social cohesiveness that supplement their academic achievement. Participation in extracurricular activities had a positive impact on science achievement.

Students having access to computer and Internet had significantly better achievement in science than those deprived of such amenities. Better use of technology makes the students aware of technological improvement and gives them an edge. Access to computer and Internet in classroom provides them with additional advantages.

Table 1: Mean Achievement Score in Science Related to Various Variables (Rural Students)

Variables	Sub – Variables	N	Mean	S.D.	't' Value	.05 level
Sex	Male	150	28.79	9.2	0.41	Non – Significant
	Female	130	28.35	8.83		
SES	Favorable	59	33.20	6.37	11.39	Non – Significant
	Unfavorable	74	19.53	7.51		
Co – curricular Activities	Participant	214	27.27	8.2	.22	Non – Significant
	Non - Participant	66	22.52	7.8		
Access to Computer	Access	63	28.17	7.5	3.66	Significant
	Non – Access	217	24.32	7.2		
Access to Internet	Access	84	30.5	8.13	4.26	Significant
	Non - access	196	26.2	6.97		

Table 2: Mean Achievement Score in Science Related to Various Variables (Urban Students)

Variables	Sub – Variables	N	Mean	S.D.	't' Value	.05 level
Sex	Male	180	29.42	8.75	1.39	Non – Significant
	Female	140	28.07	8.63		
SES	Favorable	67	35.8	6.50	12.83	Non – Significant
	Unfavorable	73	22.2	6.12		
Co – curricular Activities	Participant	250	28.70	8.25	2.95	Significant
	Non - Participant	70	25.63	7.63		
Access to Computer	Access	236	30.54	7.33	6.04	Significant
	Non – Access	84	25.58	6.25		
Access to Internet	Access	150	31.83	7.52	5.70	Significant
	Non – Access	170	27.21	7.13		

7. Implications

This paper focused on certain pertinent factor that could improve achievement in science. As it was found that SES, co-curricular activities, access to computer and Internet facility had significant influence

on achievement in science, it is necessary to emphasize on co-curricular activities, computer and Internet facilities in the classroom. Improvements in computer and Internet facilities are suggested and functional inclusion of co-curricular activities in curriculum is necessary.

8. Conclusion

In this study, gender of the students had no significant relationship with the achievement in science. Socio-economic Background of the family, access to the computer and Internet facility had a positive impact on achievement in science of the students. Co-curricular activities of rural students had no significant effect on achievement in science but urban students showed contrary trends. Those urban students who participated in co-curricular activities had positive influence on achievement in science.

References

1. Das, J. and G. Nava. (2001). Achievement of standard viii students in Hindi with respect to their Socio-Economic Status, Caste and Sex. Journal of Education and Psychology, 59(4), 27-37
2. Mohapatra M. and J. Mishra (2000). Gender Effect on Achievement in Science with special Reference to Mechanics from Primary to secondary School Years – A Study under Indian Conditions, 37(3), 1-7.
3. Moriana J.A. et.al. (2006). Extra Curricular Activities and Academic Performance in Secondary Students. Electronic Journal of Research in Educational Psychology, (ISSN. 1696-2095), No. 8 Vol.4(1), 55-56.
4. Papanastasiou. E.C. (2004). Examining when Instructional Activities Work Well in Relation to Science Achievement. (www. Iea.nl/fileadmin/user-upload/IRC)
5. Tahira K. (2010). Personal and Institutional Factors and their Influence on Science Achievement. Indian Educational Review Vol. 46 No. 1.
6. Wellberg. J. (1991). Home Environment and School Learning: Theories, models and Evidence. University of Illinois at Chicago.