CONFLUX
JOURNAL OF EDUCATION

pISSN 2320-9305 eISSN 2347-5706
Volume 8, Issue 1, December 2019

ACHIEVEMENT IN CHEMISTRY IN RELATION TO THE PROFICIENCY IN ENGLISH OF STANDARD IX STUDENTS

Gopalakrishnan. P.P[1] and Dr. C. Naseema[2]

Abstract

The purpose of the study was to find out the relationship between Achievement in Science Subjects and Proficiency in English of secondary school students. Nowadays even in schools where the medium of instruction was only regional language there is a tendency to add some English medium divisions. The new two year B.Ed. curriculum is also giving due importance to English language. But for the development of the individual, society and nation, in general, science education and development of technology play an important role. So, it is worthwhile to find out whether there is any relationship between Achievement in Science and Proficiency in English and in which direction it will affect. The study was conducted on a representative sample of 1000 pupils of standard IX from almost all revenue districts of Kerala using stratified random sampling technique. Achievement test in Chemistry and Proficiency test for English were used as tools. The study proved that the correlation between Achievement in Chemistry and Proficiency in English for total sample and relevant subsamples are all significant at 0.01level. The test of comparison of correlations between Achievement in Chemistry and Proficiency in English for subsamples based on gender and locality of schools were found to be similar. Achievement in Chemistry and Proficiency in English for the rural school students found to be higher than that of urban school students.

INTRODUCTION

Coronage: Sensex suffers its 2nd biggest 1-day loss ever (The Times of India, 29th Feb 2020). Because ofthe fears of Corona virus pandemic the one day decline in the sensex alone wiped out Rs 5.5 lakh crore of investors wealth. Epidemic like cholera, smallpox, tuberculosis, malaria etc. are now under control and some are even eradicated with the development of science and technology. The advancement of science is the need of the hour and it is sure that the development of technology will soon bring solutions to control anything that impede the progress and well-being of humanity.

Science, technology and development are interconnected with each other. Advancement in science paves way to the improvement in technology which in turn helps the development of the individual, society, nation and universe. Science is basically the perusal of knowledge with scientific spirit. Technology is the application part of this gained unbiased knowledge. The knowledge that is gained through understanding facts, which is again tried for true analysis and synthesis imbibing the pure spirit of science surely will find solution for our problems that mankind faces in this mundane world.

[1] Research Scholar, Department of Education, University of Calicut
[2] Professor, Department of Education, University of Calicut

Development of the individual, society and nation is based on technology. If any nation is reluctant or slow to give importance to science and technology cannot cope with the modern society and will be rated as underdeveloped.

The underdeveloped countries where the development of science and technology is lagging naturally have to depend on developed countries even to sustain their lives. Consequently the developed countries gain more economic status and prosperity than scientifically unsophisticated underdeveloped countries.

NEED AND SIGNIFICANCE

The development of the individual, society and nation is based, a great extent, on the development of science and technology. India being a developing nation has to advance more in the field of science and technology to reach the standard of developed nations.

For the advancement of science and technology education is the only means. For this our curriculum from primary school to university level is to be improved accordingly. Under the aegis of NCERT at the national level and SCERT at the state level are doing their level best to revamp and innovate the school educational system.

The two year B.Ed. curriculum Frame work introduced and implemented by NCTE, in all universities of India with effect from 2015 academic year, is a milestone intended to improve secondary education by imparting interdisciplinary and multidisciplinary training to B.Ed. students in which training no optional subject stand isolated. The new B.Ed. curriculum gives much importance to language education especially to English language. Normally the main purpose of language, nationally or internationally, is communication. But the new B.Ed. curriculum envisages ample opportunities for developing not only basic language skills but also higher order language skills suitable and indispensable for diplomatic deals, international negotiations and amicable settlements.

No doubt, the three language formula that now we follow in schools, will impart new momentum for language education as newly trained teachers enter into service. But India being a developing nation there is much scope for science education and technological training which will provide ample job opportunities for individual. Considering this reality we are giving much importance to both science and language especially English language. In schools where the medium of instruction were regional language, we have attached some divisions with medium of instruction English. In what way this propensity towards language education especially English language will affect the future citizens is to be examined in this context.

After school education, most of the students wish to get through the entrance examinations that demand thorough knowledge of science subjects. Hence it is worthwhile to examine whether the importance given to English will affect their achievement in science subjects which in turn will affect, ultimately, the prospects of the later life of the pupils.

But the reality is somewhat different. Though we are giving importance to both science education and language education students in Kerala, when compared to the students of other states are far behind in their ability in expressing their ideas in English and in conveying what

pISSN 2320-9305 eISSN 2347-5706
Volume 8, Issue 1, December 2019

they wanted to transact through that medium. The investigator has experienced many instances to feel that students from Kerala, though they have enough knowledge of the subject, stand aloof behind the backdrop while taking part in debates, discussions, seminars or symposiums etc. with students of other states. Even those students who got higher ranks in entrance examinations are very poor in their performance while they face the interview board and fail as they are unable to express their ideas clearly and fluently when and where it is essentially required. Because of this reason even students having high academic standard are sidelined in campus interviews and other government and private careers.

Though these students possess good certificate of merit in their academic achievements why they are not able to face the situations that needed proper and pat replays, expressions and answers is a question that needs thorough perusal. Considering these forgoing facts and doubts the Investigator intended to put forward some suggestions and solutions and hence decided to conduct a study to find out the relation between student's knowledge in science subjects and their proficiency in English, if any.

Chemistry being a typical science subject and investigator being a physical science teacher conducted a study to find out whether there is any relationship between Achievement in Chemistry and Proficiency in English.

OBJECTIVES OF THE STUDY

1. To estimate whether there exists any significant relationship between Achievement in Chemistry and Proficiency in English of secondary school students for the total sample and the selected subsamples such as (a) boys and girls (b) urban and rural school students and (c) government and private school students.
2. To test whether there exists any significant difference in the relationship between Achievement in Chemistry and Proficiency in English for the selected subsamples of(a) boys and girls (b) urban and rural school students and (c) government and private school students.

HYPOTHESES OF THE STUDY

1. There exists significant relationship between Achievement in Chemistry and Proficiency in English of secondary school students for the total sample and the selected subsamples such as (a) boys and girls (b) urban and rural school students and (c) government and private school students.
2. There exists significant difference in the relationship between Achievement in Chemistry and Proficiency in English for the selected subsamples of(a) boys and girls (b) urban and rural school students and (c) government and private school students.

METHODOLOGY

Sample Used:

The study was conducted on a representative sample of 1000 pupils studying in standard IX, randomly selected from the schools situated in almost all Revenue Districts of Kerala

(Kannur, Kozhikode, Malappuram, Palakkad, Thrissur, Ernakulam, Kottayam, Alappuzha, Kollam and Thiruvananthapuram). Stratified random sampling technique was used, giving due representation to factors like gender, location of the schools (urban and rural) and type of school management (Government and Private).

Tools Used:

The following tools were used for the collection of data.

1. Achievement Test in Chemistry for standard IX students (Naseema &Gopalakrishnan, 2018).
2. Proficiency in English Test for standard IX students(Gopalakrishnan &Naseema 2018).

Statistical Techniques Used:

1. Pearson's Product Moment Coefficient of Correlation 'r'
2. Test of significance of difference between two 'r's(Garrett, 1979)

ANALYSIS OF THE DATA

The Mean, Median, Mode, Standard Deviation, Skewness and Kurtosis were calculated for the independent variable Proficiency in English and Dependent variable Achievement in Chemistry for total sample and subsamples using conventional methods and the details are presented in Table 1.

Table 1. Statistical Constants of Proficiency in English and Achievement in Chemistry for the Total Sample

Sl. No.	Variable	Mean	Median	Mode	S.D	Skewness	Kurtosis
1.	Proficiency in English	48.29	47	53	17.28	0.283	-0.562
2.	Achievement in Chemistry	50.57	47.00	41	17.97	0.358	-0.675

The Table 1 reveals that the statistical constants such as mean, median, mode, standard deviation, skewness and kurtosis of the Proficiency in English are 48.29, 47, 53, 17.28, 0.283 and -0.562 respectively. The statistical constants of the Achievement in Chemistry are 50.57, 47.00, 41, 17.97, 0.358 and -0.675 respectively. All the values have been calculated for the total sample (N=1000).

The shape of the distribution of scores of the Achievement in Chemistry and ofthe Proficiency in English were examined by plotting the distribution. The statistical constants and the graphical representation of the variables revealed that all the distribution approximate to normality.

pISSN 2320-9305 eISSN 2347-5706
Volume 8, Issue 1, December 2019

Correlation Analysis

The extent of relationship between Achievement in Chemistry and Proficiency in English was calculated using Pearson's product Moment Coefficient of Correlation. For interpreting 'r' in addition to verbal interpretation, indices like level of significance, percentage overlap and confidence intervals were also calculated for total sample and selected subsamples. Each of the coefficient of correlation 'r' was tested for significance. Details are presented in Table 2.

Table 2. Details of the Relationship between Achievement in Chemistry and Proficiency in English for Total Sample and Selected Subsamples

Sl. No.	Variables Compared	Samples	r	Fisher's t	% Overlap	Confidence Interval		Level of Significance
						Upper limit	Lower limit	
1.	Achvt. in Chemistry Proficiency in English	Total	0.656	27.457	43.03	0.703	.610	0.01
2.	Achvt. in Chemistry Proficiency in English	Boys	0.642	18.69	41.22	0.710	.574	0.01
3.	Achvt. in Chemistry Proficiency in English	Girls	0.637	18.44	40.58	0.706	0.568	0.01
4.	Achvt. in Chemistry Proficiency in English	Urban	0.619	17.588	38.32	0.690	0.547	0.01
5.	Achvt. in Chemistry Proficiency in English	Rural	0.695	21.571	48.30	0.755	0.635	0.01
6.	Achvt. in Chemistry	Government	0.631	18.151	39.82	0.701	0.561	0.01

Sl. No.	Variables Compared	Samples	r	Fisher's t	% Overlap	Confidence Interval		Level of Significance
						Upper limit	Lower limit	
	Proficiency in English							
7.	Achvt. in Chemistry Proficiency in English	Private	0.683	20.867	46.65	0.745	0.621	0.01

The coefficient of correlations between Achievement in Chemistry and Proficiency in English for total sample and selected subsamples of boys and girls, urban and rural school students, government and private school students suggested that the relationships between these variables for all the samples were positive and it could be verbally interpreted as substantial or marked. In all cases the values of 'r' were positive indicating that any increase in the Proficiency in English would result in an increase in the Achievement in Chemistry and vice versa. All the relationships were found to be significant at0.01 level.

Comparison of Correlations

a) Between Boys and Girls

The correlation between Proficiency in English and Achievement in Chemistry of boys and girls were compared using the test of significance of difference in 'r's. The results are given in Table 3.

Table 3. Results of Test of Significance of Difference in 'r's between Proficiency in English and Achievement in Chemistry of Boys and Girls

Sl. No.	Sample	N	r	Critical Ratio
1	Boys	500	0.642	0.00
2	Girls	500	0.637	

The critical ratio obtained is found to be less than 1.96. Hence the difference in the correlations between boys and girls (when scores of Proficiency in English and Achievement in Chemistry were correlated) is not significant at 0.05 level. Therefore, it can be inferred that the relationship between the variables Proficiency in English and Achievement in Chemistry is similar for both boys and girls.

b) Between Urban and Rural School Students

The correlation between Proficiency in English and Achievement in Chemistry of urban school Students and rural school Students were compared using the test of significance of

pISSN 2320-9305 eISSN 2347-5706
Volume 8, Issue 1, December 2019

difference between 'r's. The results are given in Table 4.

Table 4. Results of Test of Significance of Difference in 'r's between Proficiency in English and Achievement in Chemistry of Urban and Rural School Students

Sl. No.	Sample	N	r	Critical Ratio
1	Urban	500	0.619	2.22*
2	Rural	500	0.695	

* indicates 0.05 level of significance

The critical ratio obtained is found to be greater than 1.96. which indicates that the difference in the correlations between Proficiency in English and Achievement in Chemistry for urban school students and rural school students is significant at 0.05 level. Therefore it can be seen that the relationship between the variables Proficiency in English and Achievement in Chemistry for rural school students is higher compared to that of urban school students.

c) Between Government and Private School Students

The correlation between Proficiency in English and Achievement in Chemistry of government school students and private school students were compared using the test of significance of difference in 'r's. The results are given in Table 5.

Table 5. Results of Test of Significance of Difference in 'r's between Proficiency in English and Achievement in Chemistry of Government and Private School Students

Sl. No.	Sample	N	r	Critical Ratio
1	Government	500	0.631	1.42
2	Private	500	0.683	

The critical ratio obtained is found to be less than 1.96. Hence the difference in the correlations between Proficiency in English and Achievement in Chemistry for government school students and private school students is not significant even at 0.05 level. Therefore, it can be seen that the relationship between Proficiency in English and Achievement in Chemistry is similar for both government school students and private school students.

CONCLUSION AND INTERPRETATION

The analysis revealed that the correlation between the Achievement in Chemistry and Proficiency in English for total sample and selected subsamples boys and girls, urban school students, rural school students, government school students and private school students were all positive and significant at 0.01 level.

The findings revealed that the better the Proficiency in English the more the Achievement in Chemistry and vice versa. It was clear that the high Proficiency in English would enhance the Achievement in Chemistry and the correlation was highly significant and positive in nature. Hence parents and teachers should give ample opportunities for the child for enhancing the

Proficiency in English language so that it will be easier for the child to grasp other subjects and enhance their abilities.

Also it was found that the relationship between the variables Proficiency in English and Achievement in Chemistry for rural school students is higher compared to that of urban school students. For other sub samples there exists no significant difference between the relationships. So the urban school students need more attention in both English and Science Subjects.

The new two-year B.Ed. curriculum gives ample opportunities for the trainees to develop language skills especially skills related to English language so that after training the teachers will be able to impart those skills to their students. The findings of the study evidenced that the extra care given to English language in B.Ed. curriculum and in school curriculum will not be a hindrance to the students' achievement in science subjects, instead, it will enhance their abilities. Students' proficiency in English can be utilized to explore the physical world, the chemistry of materials and to stimulate the creative and enquiring qualities that will improve their problem solving ability.

REFERENCES

Agnihotri, R.K.,Khanna,A.L.,& Sachdev, I. (1998). *Social psychological perspectives in second language learning (RAL4)*. New Delhi: Sage Publications.

Best, J.W., & Kahn, J.V. (1995). *Research in education(7th ed.)*. New Delhi: Prentice Hall of India.

Bloom, B.S. (1970). *Taxonomy of educational objectives handbook-I- Cognitive domain*. London: Longman Group Ltd.

Bruner, J.S. (1962). *The process of education*. Cambridge: Harward University Press.

Chopra, S.L. (1982). A study of some non intellectual correlates of academic achievement. In M.B. Buch (Ed.), *Third Survey of Research in Education*. New Delhi: NCERT, 660.

Comber, L.C., & John, P.K. (1972). *Science education in nineteen centuries*. New York: A Halsted Press Book.

Eliot, T.S. (1921). *The sacred wood: Essays on poetry and criticism*. New York: Alfred A. Knopf.

Ferguson, G.A. (1976). *Statistical analysis in psychology and education*. Tokyo: McGraw Hill.

Gagne, R.M. (1970). The conditions of learning. In M.H. Dembo (Ed.), *Teaching for learning: Applying educational psychology in the classroom*. California: Goodyear Publishing Co. Inc.

Garrett, H.E. (1979). *Statistics in psychology and education*. Bombay: Feffer&Simon Ltd.

Good, C.V. (1973). *Dictionary of education (4th ed.)* New York: Mc Graw Hill Book Co.