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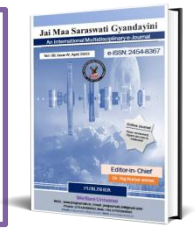

Reading & Writing Ability and Achievement in Science - A Correlational Study

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KEYWORDS

Science, Reading Ability, Writing Ability, Achievement in Science, U.P. board

ABSTRACT

Science is not just a subject studied in schools but a way of living. Learning science leads to the development of a positive and logical approach to life. There are many obstacles to learning science. 'Reading and Writing' is one of them. The Reading and Writing Ability of students not only play an important role in learning Science (Heselden & Staples, 2002) but also help in achieving good scores in Science. This paper establishes a relationship between the Reading & Writing Ability of sixth-class UP board students with their Achievement in Science. In this study, 'Self-constructed Reading & Writing tests' were used along with the 'Self-constructed Achievement tests'. The sixth-class students of the U.P. board of Ghaziabad schools were considered as the population of the study. The Random Cluster Sampling technique was used in order to draw 65 sixth-classes UP board students from two schools in Ghaziabad. 'Pearson's Product-Moment Correlation Coefficient' was used to find out the relationship between the Reading & Writing Ability of sixth-class UP board students with their Achievement in Science. The analysis of results shows that the Reading Ability of sixth-class UP board students and Achievement in Science are strongly correlated with each other. In addition to this, the Writing Ability of sixth-class UP board students has a positive moderate correlation with their Achievement in Science.

Introduction

Science matters a lot in our lives. It not only procures a good career in life but also a part of life. Science does not tell anyone 'what to think, instead it tells us 'how to think'. In other words, Science develops analytical thinking, logical thinking, problem-solving skills etc. among students. A school is a right place to start learning the concepts of science and to develop a positive attitude towards science. In the process of learning different concepts of science, Reading and Writing on one hand serves as a dynamic vehicle and on other hand lack of them acts as a barrier. For a student to be well-versed with scientific concepts, he/she must have the reading ability to understand the information given in printed form; and the writing ability to express his/her thoughts in written form (Holliday et al, 1994).

Lack of Reading and Writing abilities are one of the major obstacles to learning science. Besides that, these abilities are considered as prerequisite in order to secure good grades in science. According to Holliday et al (1994), "Reading and writing activities can serve as conceptual tools for

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helping students to analyze, interpret, and communicate scientific ideas". There are many studies that are related to reading literacy (Lee & Fradd, 1996; Geske & Ozola, 2008; Richards & Islam, 2018; Hochweber & Vieluf, 2018). It was found in different studies that reading literacy of the students plays an important role in learning science concepts and lessons (Lee & Fradd, 1996; Heselden & Staples, 2002). Low literacy levels in students was found to create difficulties in understanding other subjects also (Geske & Ozola, 2008) including science & maths (Walkington et al, 2018). Richards & Islam (2018) reported that very low percentage of students (30%) were able for reading. Walkington et al (2018) analyzed data of 20 years from the National Assessment of Educational Progress & the trends in International Mathematics and Science Study. They also studied 'how students' readability factors, like length, word difficulty and pronouns affect achievement in mathematics'.

Reading Ability

A reading ability can be described as "a cognitive ability which a person is able to use when interacting with texts (Urquhart & Weir, 1998)". Reading, in real terms means comprehending the written text. In the beginning, students try to read mechanically what has been written. In fact, they appear to be "glued to print" (Chall 1983), trying to make out what has been written. Gradually, they start understanding the text, comprehending it, and answering questions based on the text.

Writing Ability

Writing Ability means the skill to communicate one's own thoughts, ideas, feelings, knowledge, or information through written words. They are considered very important in the dissemination of knowledge in a wider area. Applebee (1977) correctly described Writing as "thinking with a pencil."

Achievement in Science

According to APA Dictionary of Psychology, achievement means "the attainment of some goal, or the goal attained. It may be the acquired knowledge (especially in a particular subject), proficiency, or skill. The term is most often used in this sense to mean academic achievement".

Academic achievement refers to the amount of content or success that an individual/student/group has achieved after completing an assignment or school academic year. Ultimately, academic achievement can be said as the learning outcome of a student. When it comes to 'Achievement in Science', it means the accomplishment or attainment of a student in school science after the completion of a concept, assignment, chapter or the complete academic year.

Objectives of the Study:

To study the relationship between Reading Ability and Achievement in Science of sixth class UP board students.

To study the relationship between Writing Ability and Achievement in Science of sixth class UP board students.

Hypothesis of the Study:

In the light of set objectives, following null hypothesis had been formulated:

"there is no significant relationship between Reading Ability of sixth class UP board students and their Achievement in Science".

"There is no significant relationship between Writing Ability of sixth class UP board students and their Achievement in Science".

Methodology

Method of the study

To conduct any study, various research methods, like philosophical, case study, ex-post-facto, experimental, survey, etc., are available to a researcher. Considering the nature and the objectives of the study, the researcher used the 'Survey method'.

Population

The sixth class U.P. board students of schools situated in Ghaziabad were considered as the population for the present study.

Sample and Sampling Technique

To draw the sample for the present study, the Random Cluster Sampling technique was used.

From BSA office, a list was collected by the researcher that consisted of all UP board schools situated in Ghaziabad. Two schools were selected randomly from the list. All the sixth class students of both the selected schools, present on the day of data collection, were taken as 'Sample for the Study'. There were 30 students in one school and 35 students in the second school.

Tools

1. Self-Constructed Reading Ability Test
2. Self-Constructed Writing Ability Test
3. Self-Constructed Achievement in Science Test

Statistical analysis

To attain the predetermined objectives,

(i) The 'Pearson's Product-Moment Correlation Coefficient' was calculated to find out the relationship between the Reading Ability of sixth class U.P. board students and their Achievement in Science.

(ii) The 'Pearson's Product-Moment Correlation Coefficient' was calculated to find out the relationship between the Writing Ability of sixth class U.P. board students and their Achievement in Science.

Result and interpretation

As the researcher has conducted this study with two objectives, its results are discussed as follows:

Objective 1: To study the relationship between Reading Ability and Achievement in Science of sixth class UP board students.

For attaining this, a null hypothesis (Ho) had been formulated by the researcher.

Hypothesis 1: "there is no relationship between Reading Ability of sixth class UP board students and their Achievement in Science".

To test the above-stated null hypothesis, ***the 'Pearson's Product-Moment Correlation Coefficient'*** was calculated between the Reading Ability of sixth class UP board students and their Achievement in Science.

	Reading Ability	Achievement in Science
Reading Ability	1	0.75
Achievement in Science	0.75	1

Table 1. Pearson's Product-Moment Correlation Coefficient results between the Reading Ability of sixth class U.P. board students and their Achievement in Science.

Table 1 shows the Coefficient of Correlation between the Reading Ability of sixth class UP board students and their Achievement in Science is +0.75, which indicates that they have a strong positive relationship with each other.

Objective 2: To study the relationship between Writing Ability and Achievement in Science of sixth class UP board students.

In order to attain this objective, a null hypothesis (Ho) had been formulated by the researcher.

Hypothesis 2: "there is no relationship between Writing Ability of sixth class UP board students and their Achievement in Science".

To test the above-stated null hypothesis, the 'Pearson's Product-Moment Correlation Coefficient' was calculated between the Writing Ability of sixth class UP board students and their Achievement in Science.

	Writing Ability	Achievement in Science
Writing Ability	1	0.66
Achievement in Science	0.66	1

Table 2. Pearson's Product-Moment Correlation Coefficient results between the Writing Ability of sixth class U.P. board students and their Achievement in Science.

Table 2 shows the Coefficient of Correlation between the Writing Ability of sixth class UP board students and their Achievement in Science is +0.66, which indicates that they have a moderate positive relationship with each other.

Discussion and Conclusion

Based on the results of the Coefficient of Correlation between the Reading Ability of sixth class UP board students and their Achievement in Science, a strong positive correlation has been found between them.

Based on the results of the Coefficient of Correlation between the Writing Ability of sixth class UP board students and their Achievement in Science, a moderate positive relationship has been found between them.

'Learning to Read' prepares students for 'Reading to Learn' (Glynn and Muth, 1994). And, when it comes to Writing, it is not just necessary to secure good grades at different levels of education, but also for disseminating one's ideas, thoughts, knowledge, and information.

The Reading and Writing abilities of students are certainly positively correlated with their Achievement in Science. The results of the present study indicated it very clearly. Reading and Writing can be considered a prerequisite to attaining the concepts of science. Moreover, it is not wrong to say that they are one of the important foundational skills one should have for learning any subject.

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