

SCIENTIFIC ATTITUDE AND TEACHING COMPETENCY OF SECONDARY SCIENCE TEACHERS – A CORRELATION STUDY

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Abstract

The main objectives of the study were to find out the level of scientific attitude and teaching competency of secondary science teachers and to find out the relationship between scientific attitude and teaching competency of secondary science teachers. The sample consists of 120 secondary science teachers randomly selected from 20 high and higher secondary schools of Thoothukudi district of Tamil Nadu. Scientific Attitude Scale and Teaching Competency Scale were used as tools to collect data. The research reveals that the level of scientific attitude and teaching competency of secondary science teachers was moderate and there is significant relationship found between scientific attitudes and teaching competency of secondary science teachers.

Keywords: *Scientific Attitude, Teaching Competency, Secondary Science Teachers.*

Introduction

Scientific attitude removes superstitions, false beliefs wrong notions spread in the society and cultivate the habit of proper reasoning, observations, experimentation, problem solving (Sharma, 2009). Scientific Attitude is the most important outcome of science teaching. Though some people view the Scientific Attitude as the byproduct of teaching science, yet a majority of the people consider it as equally important as knowledge aspect. Scientific Attitude is of very significant concern in the process of science education. Scientific attitude is the combination of many qualities and virtues which is reflected through the behaviour and action of the person. These persons are open minded, experiment oriented, systematic in approach, possess love for knowledge, intellectually honest, unbiased, truthful and possess scientific temper. (Tripathi, 2005).

Teaching is a deliberate and persistent activity which is calculated to vitalize the mind of the young with mental pabulum that has to be not only palatable but also rich in the constructive elements of culture. That is how the work of the teacher has come to be regarded as Educreation instead of mere Education. Therefore people with high intellectual caliber, quick with imagination and resourcefulness, should take to the teaching profession so as to sustain the interest of the young and ignite them into constructive activity along the lines of their natural aptitudes and in accordance with the urgent needs of gainful occupation. Teaching competency is the skill, ability and capability possessed by the teacher so as to make the teaching -learning effective and productive there by realizing the full potential of teacher as well as students and in turn achieving the goals of education (Anisha, 2008). Competent teaching demands exceptional qualities – intellectual, moral, physical, emotional and a sincere devotion to human betterment (Gould & Yoakam, 1947).

Significance of the Study

Science is playing a major role in the present age to satisfy the needs and desires of the people and it has also become one of the major human activities. Science Education by virtue of the fact that it provides more developments of the scientific aptitude required of an individual in the Secondary schools is likely to be associated with the scientific attitude on academic achievement in science of the students. Scientific attitude is the way of thinking reasonably, logically and clearly without any prejudice or preconceived notion. It is necessary because unscientific thinking can create problem for the world. Science teaches us how to think correctly. It tells us not to accept a statement as fact unless we are given proof of it. Science teaches us not to jump to conclusions. Verify your facts, then only form a conclusion. Science shows us how to gather sufficient facts before arriving at a conclusion. This is the age of science, of logic. Every effect has a cause, a reason. Nothing happens that cannot be explained. Unscientific thinking can bring down a nation and impede its progress.

Any definition of teaching Competency depends on teaching in a particular setting, the culture and values held in the community. It also depends on the innumerable teacher and student characteristics and the classroom context (Pranjal Nagar, 2017). The effectiveness or ineffectiveness of teaching is closely linked to teaching Competency. Competent teacher would also create classroom conditions and climate, which are conducive for student learning. Teaching competency has various dimensions such as content knowledge, instructional planning, student motivation, presentation and communication skills, evaluation competencies and classroom management skills. While the teacher would require all these dimensions to a reasonable extent, it is in the manifestation of these in an integrated manner that makes him effective in the classroom context. In this view this study intends to find the relationship, if any, between scientific attitude and teaching competency of secondary science teachers.

Objectives of the Study

1. To find out the level of scientific attitude and teaching competency of secondary science teachers with regard to Gender.
2. To find out the significant relationship, if any, between scientific attitude and teaching competency of secondary science teachers.

Method Adopted

Survey method was adopted for the present study.

Population and Sample

The population for the study consists of all the secondary science teachers working in high and higher secondary schools of Thoothukudi district, Tamil Nadu.

The sample consists of 120 secondary science teachers from 20 high and higher secondary schools of Thoothukudi district, Tamil Nadu.

Tools Used

1. **Scientific Attitude Scale** consists of 34 statements developed and validated by Mr. A. Balamurugan (Investigator) and Dr. T. Ranjith Kumar (Research Supervisor) in 2017.
2. **Teaching Competency Scale** consists of 40 statements developed and validated by Sumathi and Sheela in 2010.

Analysis of Data

The statistics employed in the study were percentage analysis and 'r' test. The analyses were presented in the following tables.

Table 1 Level of Scientific Attitude of secondary science teachers with regard to Gender

| Variable | Gender | N | Low | | Average | | High | |
|---------------------|--------|----|-----|-----|---------|------|------|------|
| | | | No. | % | No. | % | No. | % |
| Scientific Attitude | Male | 44 | 2 | 4.5 | 35 | 79.5 | 7 | 15.9 |
| | Female | 76 | 6 | 7.9 | 55 | 72.4 | 15 | 19.7 |

It is inferred from the above table that 4.5% of the male secondary science teachers have low, 79.5% of them have average and 15.9% of them have high level of Scientific Attitude. It is also inferred that 7.9% of the female secondary science teachers have low, 72.4% of them have average and 19.7% of them have high level of Scientific Attitude.

Table 2 Level of Teaching Competency of Secondary Science teachers with Regard to Gender

| Variable | Gender | N | Low | | Average | | High | |
|---------------------|--------|----|-----|-----|---------|------|------|------|
| | | | No. | % | No. | % | No. | % |
| Teaching Competency | Male | 44 | 1 | 2.3 | 38 | 86.4 | 5 | 11.4 |
| | Female | 76 | 5 | 6.6 | 62 | 81.6 | 9 | 11.8 |

It is inferred from the above table that 2.3% of the male secondary science teachers have low, 86.4% of them have average and 11.4% of them have high level of Teaching Competency. It is also inferred that 6.6% of the female secondary science teachers have low, 81.6% of them have average and 11.8% of them have high level of Teaching Competency.

H₀₁: There is no significant relationship between Scientific Attitude and Teaching Competency of secondary science teachers.

Table 3 Relationship between Scientific Attitude and Teaching Competency of Secondary Science Teachers

| Scientific Attitude | | Teaching Competency | | XY | Calculated 'r' value | Remarks |
|---------------------|----------------|---------------------|----------------|---------|----------------------|---------|
| X | X ² | Y | Y ² | | | |
| 17592 | 2587688 | 21644 | 3912634 | 3178017 | 0.573 | S |

Table value of 'r' is 0.174, S – Significant (Biswal & Dash, 2006).

It is inferred from the above table that the calculated 'r' value (0.573) is greater than the table value (0.174) at 0.05 level of significance. Hence the null hypothesis is rejected. This shows that there is significant relationship between Scientific Attitude and Teaching Competency of secondary science teachers.

Findings

1. 4.5% of the male secondary science teachers have low, 79.5% of them have average and 15.9% of them have high level of Scientific Attitude.
2. 7.9% of the female secondary science teachers have low, 72.4% of them have average and 19.7% of them have high level of Scientific Attitude.
3. 2.3% of the male secondary science teachers have low, 86.4% of them have average and 11.4% of them have high level of Teaching Competency.
4. 6.6% of the female secondary science teachers have low, 81.6% of them have average and 11.8% of them have high level of Teaching Competency.
5. There is significant relationship between Scientific Attitude and Teaching Competency of secondary science teachers.

Educational Implications

From the study the investigator recommended that, the school managements should allow and allot adequate funds and facilities to their teachers to involve in research activities. This may improve their scientific attitude. The teacher with higher scientific attitudes may inspire their students to know the depth of the science and improve their scientific attitude through school laboratory activities. In-service training should be given to secondary science teachers to improve their scientific attitude. Providing opportunity for the analysis of problem situation also helps to reset intellectually in the development of scientific attitude among teachers. The school management should allot adequate funds to improve their laboratory facilities and other facilities to improve the scientific attitude and teaching competency of the teachers.

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