Role of Teacher Educational Institutions in Developing Attitude of Student Teachers towards Science

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Abstract

There is a great need to identify and develop positive attitude towards science subject of student teachers. The time has come to increase our efforts to develop positive attitude towards science subject among teachers, student teachers and school children. This is an immediate requirement of the present day. Here, the role of Teacher Educational institution is vital. This paper reports on attitude of student teachers towards science and the role of Teacher Educational institutions in developing it. The sample consists of 1080 student teachers of Madurai revenue district. A scale on attitude towards science was used to get the data from the student teachers. Percentage analysis, Mean, Standard deviation and ‘t’ tests were used for analyzing the data. The results showed that there is significant difference in attitude towards science of Government Aided and Self Finance College student teachers.

Keywords: Attitude towards science, Student teachers, Teacher Educational Institutions.

Teacher Education is an integral part of any educational system. Teaching is both a skill and an art (Aggarwal, 1964). Mass literacy goals as well as the emergency of technology transferred the very character of teacher training and its philosophy. The National Policy on Education 1986 reflects precisely this change in the concept and practice (Aggarwal, 2006).

The term ‘teacher education’ (as opposed to teacher training) implies the lifelong development of pedagogical and disciplinary knowledge in relation to and understanding of theories of learning and development, the historical and philosophical contexts of education and the ability to adapt instruction to a variety of learning situations. (Crow, 1973)

An attitude is an emotional reaction towards a person or thing. It is a personal response to an object, developed through experience which can be characterized as favourable or unfavourable. (Dhandapani S 2006) The use of science as the object or stimulus of these feelings delineates that set of attitudes known as ‘attitude towards science’. (Baskara rao, 1997)

There is a wide spread belief among scientists and science educators that attitudes towards science are negative than is
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desired. Declining enrolment and personal experiences have created a generally discouraging situation (Conant, 1951). According to International Encyclopedia of Education, teachers and principals report their belief that the public’s image towards science has declined in recent years.

Need for the Study
As one of the researchers is a teacher educator working in self finance teacher education institution, the investigator had informal chats with the B.Ed. students and came to know about their level of attitude towards science. He came to know that many student teachers did not possess adequate level of attitude towards science very much needed for them to undergo teacher education programme successfully that would help them to become successful teachers in the future and prepare the youth for a bright future of the nation. Under these circumstances, the investigator has decided to undertake a comparative analysis on the attitude towards science of student teachers of Government aided and self finance teacher educational institutions.

Objectives
- To find out the level of attitude towards science and its dimensions of student teachers.
- To find out whether there is any significant difference in the attitude towards science and its dimensions of student teachers with respect to their type of management.

Hypotheses
- The level of attitude towards science and its dimensions of student teachers is moderate.
- There is no significant difference in the attitude towards science and its dimensions of student teachers with respect to their type of management.

Methodology
Survey method of research was adopted for the study.

Population and Sample for the Study
The population for the present study consists of all B.Ed. students of Madurai revenue district. 1080 B.Ed. students from 20 colleges of education, Madurai revenue district were selected through random sampling technique for the study.

Tools Used for the Study
For the present study, the investigator used the following tools,
- Attitude towards Science Scale prepared and validated by the investigator.

A Likert scale was constructed. (Edwards, 1967) The questionnaire consists of 25 items; among them 13 are positive items and 12 are negative items. The tool includes four dimensions namely personal confidence about the subject matter, involvement with the subject, usefulness of the subject content and perception of teacher’s attitude. Few sample statements are given below.

- I am sure that I can learn science
- Science has been my worst subject.
- I watch science related TV programme at least once a month
- I am afraid of doing science experiments inside the classroom
- Science is a worthwhile, necessary subject
- I would talk to my science teacher about a career which uses science.

Personal Data Sheet prepared by the investigator

Data Analysis
To interpret the raw data, analyses were done using Percentage analysis, Mean, Standard deviation and ‘t’ test. The results of the analyses are presented in the following tables.

1. The level of attitude towards science and its dimensions of student teachers is moderate.
Table 1.1. Level of attitude of student teachers towards science and its dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Personal Confidence about the subject matter</td>
<td>257</td>
<td>23.8</td>
<td>576</td>
</tr>
<tr>
<td>Involvement with the subject</td>
<td>279</td>
<td>25.8</td>
<td>521</td>
</tr>
<tr>
<td>Usefulness of the subject content</td>
<td>289</td>
<td>26.8</td>
<td>493</td>
</tr>
<tr>
<td>Perception of teacher’s attitude</td>
<td>322</td>
<td>29.8</td>
<td>456</td>
</tr>
<tr>
<td>Attitude towards science in total</td>
<td>278</td>
<td>25.7</td>
<td>531</td>
</tr>
</tbody>
</table>

Table 1.2. Level of attitude towards science and its dimensions of student teachers in terms of type of management

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Govt. Aided</th>
<th>Self Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Personal confidence about the subject matter</td>
<td>28.36</td>
<td>6.127</td>
</tr>
<tr>
<td>Involvement with the subject</td>
<td>27.14</td>
<td>4.796</td>
</tr>
<tr>
<td>Usefulness of the subject content</td>
<td>22.90</td>
<td>4.334</td>
</tr>
<tr>
<td>Perception of teacher’s attitude</td>
<td>12.02</td>
<td>2.365</td>
</tr>
<tr>
<td>Attitude towards science in total</td>
<td>90.24</td>
<td>14.437</td>
</tr>
</tbody>
</table>

Null Hypotheses

1. There is no significant difference in the attitude towards science and its dimensions of student teachers with respect to their type of management.

Table 1.3. Significant difference between Government aided and self finance college student teachers in their attitude towards science and its dimensions.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Govt. Aided</th>
<th>Self Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Personal confidence about the subject matter</td>
<td>28.36</td>
<td>6.127</td>
</tr>
<tr>
<td></td>
<td>25.66</td>
<td>4.768</td>
</tr>
<tr>
<td>Involvement with the subject</td>
<td>27.14</td>
<td>4.796</td>
</tr>
<tr>
<td></td>
<td>25.94</td>
<td>5.135</td>
</tr>
<tr>
<td>Usefulness of the subject content</td>
<td>22.90</td>
<td>4.334</td>
</tr>
<tr>
<td></td>
<td>20.27</td>
<td>4.731</td>
</tr>
<tr>
<td>Perception of teacher’s attitude</td>
<td>12.02</td>
<td>2.365</td>
</tr>
<tr>
<td></td>
<td>10.82</td>
<td>2.809</td>
</tr>
<tr>
<td>Attitude towards science in total</td>
<td>90.24</td>
<td>14.437</td>
</tr>
<tr>
<td></td>
<td>82.46</td>
<td>13.268</td>
</tr>
</tbody>
</table>

It is inferred from the above table that there is significant difference between Government aided and self finance college student teachers in their attitude towards science in total and its dimensions personal confidence about the subject matter, involvement with the subject, usefulness of the subject content and perception of teacher’s attitude.

From the mean value, it is found that Government aided college student teachers are better (M = 90.24, 12.02, 22.90, 27.14 and 28.36 respectively) in their attitude towards science in total and its dimensions personal confidence about the
subject matter, involvement with the subject, usefulness of
the subject content and perception of teacher’s attitude than
the self finance college student teachers (M=82.46, 10.82,
20.27, 25.94 and 25.66 respectively).

Findings

1. (a) 22.9% of the student teachers have high level of
   personal confidence about the subject matter.
   (b) 25.9% of the student teachers have high level of
       involvement with the subject.
   (c) 27.6% of the student teachers have high level of
       usefulness of the subject content.
   (d) 28% of the student teachers have high level of
       perception of teacher’s attitude.
   (e) 25.1% of the student teachers have high level of
       attitude towards science in total.

2. (a) 45.6% of the student teachers of Government Aided
    Colleges have high level of personal confidence
    about the subject matter.
    20.8% of the student teachers of Self Finance
    Colleges have high level of personal confidence
    about the subject matter.
    (b) 33.3% of the student teachers of Government Aided
        Colleges have high level of involvement with the
        subject.
        25.3% of the student teachers of Self Finance
        Colleges have high level of involvement with the
        subject.
    (c) 47.8% of the student teachers of Government Aided
        Colleges have high level usefulness of the subject
        content.
        25.8% of the student teachers of Self Finance
        Colleges have high level usefulness of the subject
        content.
    (d) 43.3% of the student teachers of Government Aided
        Colleges have high level of perception of teacher’s
        attitude.
        26.6% of the student teachers of Self Finance
        Colleges have high level of perception of teacher’s
        attitude.
    (e) 51.1% of the student teachers of Government Aided
        Colleges have high level of attitude towards science
        in total.
        22.7% of the student teachers of Self Finance
        Colleges have high level of attitude towards science
        in total.

3. There is significant difference between Government
aided and self finance college student teachers in their
attitude towards science in total and its dimensions personal
confidence about the subject matter, involvement with the
subject, usefulness of the subject content and perception of
teacher’s attitude.

Discussion

From the present investigation, it is found that only 25.1% of
the sample has high level of attitude towards science. While
studying in terms of dimensions of attitude towards science
very small amount of the respondents have high level of
personal confidence about the subject matter, involvement
with the subject, usefulness of the subject content and
perception of teacher’s attitude. Moreover majority of the
sample have moderate level of attitude towards science and
its dimensions. This implies that the student teachers might
have been exposed to minimum levels of science activities in
their under graduate level and hence they possess a moderate
level of attitude towards science.

With the sample of the study classified in terms of their
type of management, it is observed that the 51.1% of
Government Aided College student teachers have high level
of attitude towards science and only 22.7% of Self Finance
College student teachers have high level of attitude towards
science. In the dimensions, personal confidence about the
subject matter, involvement with the subject, usefulness
of the subject content and perception of teacher’s attitude,
Government Aided College student teachers are found to
be better than the Self Finance College student teachers.
This shows the fact that Government Aided College student
teachers have wide range of exposure of science subject than
their counterparts. Government Aided Colleges with good
infrastructural facilities, experienced faculty using creative
methods in teaching science influences the student’s attitude.

From the analysis of data in the present investigation,
Government Aided College student teachers differ
significantly in their personal confidence about the subject matter, involvement with the subject, usefulness of the subject content and perception of teacher’s attitude and attitude towards science in total. This shows the fact that Government Colleges are well equipped in their resources such as library, science laboratory and educational technology labs, qualified and experienced faculties assisting students in their science related activities.

Suggestions
The authors suggested the following for improving the attitude towards science of student teachers in teacher educational institutions.

- Self finance Colleges of education should equip themselves with qualified teacher educators, good library and science laboratory facilities.
- Seminars and Conferences on science education will improve the attitudinal levels of student teachers towards science.
- The institution can provide rich environment to improve the science learning skill of the students.
- Science exhibitions should be organized in institutions to stimulate student teachers natural curiosity.
- Science club, eco club and nature club should be established in institutions to encourage the student teachers to participate in club activities.

Conclusion
The authors concluded that the type of management wise analysis on attitude towards science of student teachers brought out the fact Self Finance College student teachers are lacking in attitude towards science and its dimensions personal confidence about the subject matter, involvement with the subject, usefulness of the subject content and perception of teacher’s attitude.

References