CHAPTER – VI

Major Findings & Conclusion

6.1 Introduction:

6.2 Major Findings of the Study:

6.3 Conclusion:

6.4 Suggestion for Development of Science Education:

6.5 Recommendation for Further Study:
CHAPTER – VI

Major Findings & Conclusion

6.1 Introduction:

It is very important to properly state the findings of the study, conclusions of the investigation that the researcher had formulated. In stating the conclusion, the investigator indicated what his contribution to the field of the study. Positive as well as negative results had find place in the conclusion. It had already been reported that the present scenario of science education would be recorded through researcher’s self made questionnaire which had been applied on science teachers, heads of the institute and educational experts. The major findings of the study has been classified into different categories which are explained as follows:

6.2 Major Findings of the Study:

I. About School

(1) The result reveals that there is almost decentralization of schools among the rural and urban areas. There are 72% schools where there is no communication problem while going to and coming from the school.

(2) It is observed that around 85% schools were established after independence. Moreover 68% schools had been constructed during the period 1950-75. Researcher visited 32% secondary standard schools and 68% higher secondary standard schools out of 84 selected schools.

(3) It is observed that 83% schools are co-educated where boys and girls are getting advantages to take the knowledge of science education irrespective of gender, caste, religion etc. It is found that 64% schools belong to both community (minority & non-minority group) and as a result pupils of both communities are facilitating to have the knowledge of science education. Almost all schools (89%) are run by State Govt.

(4) There is little percentage of schools (12%) where more than thousand students are taking education. There are 88% schools where student’s strength lies in between 0 to
1000. As because of maximum schools are run by State Govt., it is obvious that 98% schools are financed by the State Govt.

(5) There are four districts in the State of Tripura. But schools are not distributed equally. It is found that 62% schools lie in West district, 8% in North, 15% in Dhalai and 15% in South district area. Again in each district there are many sub-divisions. Here also schools are not distributed equally. It is found that 52% schools lie in Sadar sub-division under West district, 67% schools lie in Dharmanagar sub-division under North district, 69% schools lie in Kamalpur sub-division under Dhalai district and 54% schools lie in Amarpur sub-division under South district.

II. About Manpower

(1) The result shows that in 46% schools sanctioned post for science teacher had been filled up and in 54% schools sanctioned posts are vacant. In 38% rural and 62% urban schools, sanctioned post for science teacher had been filled up. On the other hand in 60% rural and 40% urban schools sanctioned post for science teacher had not been filled up still now. It is also observed that out of 84 schools visited, in 13% schools laboratory assistant is available. In 87% schools there is no such staff. So far librarian is concerned it is found that in 14% schools librarian is available and in 86% schools there is no such facility.

(2) It is also observed that in 86% schools there is no problem with quality of science teacher. Only in 14% schools there is a huge shortage of quality science teacher. The result shows that 70% male and 75% female teacher are trained. It is also found that out of total science teacher, 77% teachers are trained and 23% are untrained.

(3) So far medium of instruction is concerned it is found that 95% rural and 88% urban schools teachers are using Bengali as medium of teaching. Remaining percentage of teacher (5% rural and 12% urban schools) are using English as medium of instruction.

(4) So far physical facilities are concerned it is observed that only in 60% rural and 71% urban schools, head of the institute are available. In the remaining percentage of schools (40% rural and 29% urban schools) senior most teachers is running the school as there is no head of institute.
(5) It is also found that in 31% rural and 62% urban schools, post graduate teachers are available. In 69% rural and 38% urban schools only trained graduate teachers are available.

III. About Library

(1) It is found that there are only 26% schools where library has separate reference section and reading rooms. There is an only 30 to 31% school where library contains journals, periodicals, magazines and science encyclopedias. It is found that only 25% schools library have seating arrangement available. Text books are available in 33% schools library and reference books are available in 31% schools.

(2) It is observed that standard of school science magazine is not up to the level. There are 67% rural schools where science magazine kept in the library are of below national level. In 74% urban schools the standard of school science magazine is below national level. Only 29% rural and 24% urban schools library contains science magazine of national standard. It is found that there are 57% rural and 50% urban schools where there is a shortage of science books in the library. 31% rural and 29% urban schools are suffering from physical facilities. Only 12% rural and 21% urban schools do not have any problem regarding library.

IV. About Science Curriculum

(1) Regarding science curriculum it is observed that science curriculum is available in 75% schools. 81% schools head opinion is that science book is written as per the curriculum and teachers are following the curriculum strictly. There is an opinion from 61% schools head that present curriculum is not overburden to the students. 79% schools head thought that science syllabus is framed as per the recommendation of education commission. So far science curriculum’s standard is concerned 68% schools head opinion is that it is up to the national level. But 29% schools head opinion is that standard of science curriculum is of below national level.

(2) Regarding science curriculum the teacher’s view is little bit different from the view of head of the institution. According to them there are 50% schools where science curriculum is always available. In 32% schools it is sometimes available in the school. There are 18% schools where there is not at all any science curriculum available. 45%
schools teachers’ opinion is that curriculum is not overburden to the student. 40% schools teacher think that it is sometimes overburden to the student so far different classes are concerned. But 15% schools teacher are confirmed that curriculum is totally overburden to the student. 45% schools teachers’ opinion is that science curriculum is framed as per the recommendation made by the education commission. But 31% schools teacher thought that it is sometimes not related to the as per recommendation. 24% schools teacher confirmed that curriculum framed is not at all related to the recommendation. 36% schools teacher thought that present curriculum is activity based. 51% schools teacher thought that some of the portion is activity based. According to 13% schools teacher curriculum is not at all related to the activity based.

(3) 76% rural and 78% urban teachers’ opinion is that science curriculum is correlated with both industry and agriculture. Remaining percentage of schools is either related to industry or agriculture.

(4) So far science curriculum relation with the practical life is concerned it is found that 31% rural and 12% urban schools teacher thought that it is related to job. 40% rural and 43% urban schools teacher opinion is that text is life centric and 29% rural and 45% urban schools teacher opinion is that it is related to the development of human civilization.

(5) According to the science teacher’s view about standard of science curriculum it is observed that 88% rural and 69% urban schools teacher thought that standard of science curriculum is of below national level. Only 12% rural and 26% urban schools teacher thought that it is of national level. Moreover, according to them existing science curriculum has disciplinary (26% rural and 33% urban school), utilitarian (43% rural and 38% urban school) and cultural (31% rural and 29% urban school) values.

(6) According to teacher’s point of view it is found that 17% rural and 17% urban schools are following national education commission (NEC) prescribed curriculum, 57% rural and 36% urban schools are following state education commission (SEC) prescribed curriculum. But 26% rural and 47% urban schools are following both national education commission and state education commission prescribe curriculum.
V. About School Building

(1) It is found that 67% schools building have been completed and remaining percentage of schools is under construction. But the condition of laboratory arrangement is not satisfactory. Only in 31% schools, laboratory facility is available and laboratory provision is made in 31% schools. Remaining percentage of schools does not have any facility or any provision for constructing laboratory. There are 72% schools where sufficient numbers of classrooms are available.

VI. About Science Syllabus

(1) According to teacher’s opinion, science syllabus is available in 71% rural and 95% urban schools. Only 29% rural and 5% urban schools do not have any science syllabus. 95% rural and 93% urban schools are strictly following Tripura Board of Secondary Education (TBSE) syllabus. Remaining percentage of schools is either following Central Board of Secondary Education (CBSE) or Indian Certificate of Secondary Education (ICSE) syllabus.

(2) Only 15% schools teacher think that present science syllabus is overburden to the student. 40% schools teacher think that it is sometimes overburden to the student with respect to their standard and 45% schools teacher think that syllabus is as per student standard. 24% schools teacher opinion is that science syllabus is not prepared according to the recommendation of education commission. 31% schools teacher found that sometimes syllabus is deviated from the recommendation. 45% schools teacher thinks that it is framed as per recommendation of education commission. Only 13% schools teacher think that syllabus is not at all activity based though it should be as per education commission recommendation. 51% schools teacher thinks that syllabus is framed on activity based in some respect. 36% schools teacher has found that it is strictly activity based.

VII. About Attitude, Performance & Socio-Economic Status of the Student

(1) There are different types of constraints towards the development of science education. It is observed that 33% rural and 55% urban schools student fall in middle income group. 62% rural and 24% urban schools student belong to low income group. So there socio-economic condition is not satisfactory.
(2) The information about level of attitude of the student towards science education and level of performance of the science subjects is also not up to limit. It is observed that 26% rural and 29% urban schools student’s attitude towards science education is not good. Attitude of 52% rural and 41% urban schools student about science education is just average. Only 21% rural and 31% urban schools student are very much interested about science education. As because of low attitude towards science education and bad economic situation 45% rural and 24% urban schools students have poor performance about science subject. Only 17% rural and 24% urban schools student’s performance is high towards science education. The remaining percentage of schools student’s performance is just average.

(3) It is found that there are 10% schools where students are not interested at all about science education. There are 63% schools where students are sometimes getting interested in science education. But 27% schools students are very much interested about science.

VIII. Problems of Science Education

(1) There are different kinds of academic problems towards the development of science education. So far medium of instruction is concerned there is no such major problems found except one or two cases. But there are 10% schools where there is always a language problem and in 33% schools sometimes this problem arises. In remaining 57% schools there is no such problem in student-teacher interaction.

(2) In 43% schools student-teacher ratio is not maintained at all. In 27% schools it is maintained occasionally. In 30% schools this ratio is maintained strictly.

(3) Moreover, in the locality of 21% schools science text books are not available. Sometimes text books are available in the locality of the school and the percentage is 33. Remaining in 46% schools there is no such problems at all. So far printing is concerned there is no such major problems at all except one or two cases.

(4) The socio-economic conditions of 42% schools student are not sound at all. There are 51% schools where student’s socio-economic condition is in marginal level.

(5) There are 43% schools where there is always a scarcity of science materials. In 38% schools these materials are found available occasionally. Only in 19% schools there is no such scarcity.
(6) 49% schools libraries are not fully equipped with all facilities at all. In 37% schools sometimes library is found equipped with minimum facilities. Only 14% schools do not have any kind of library problems.

(7) In 34% schools no arrangement is taken regarding familiarization of science education for science teacher. In 54% schools sometimes few arrangements are taken for familiarization of science education. But there are only 12% schools where regularity is maintained in such activities.

(8) In 42% schools there is always a shortage of science books in library. In 37% schools this kind of shortage is found occasionally. In 21% schools library there is no problem with availability of science book.

(9) There are different types of administrative problems towards the development of science education. 12% schools teacher thinks that there is always a communication problem with the school. 35% schools think that occasionally they are facing problem with communication. But 53% schools think that they do not have any such problem at all.

(10) 59% schools think that school building is not used for other activities in school time. 37% schools opinion is that sometimes school building is used for other activities. Only 4% schools think that school building is always used for other activities in school time.

(11) 45% schools opinion is that school teacher is not at all used for other activities. According to 51% schools, teachers are used for other purposes in school time.

(12) One important aspect is that there is no extremist problem except one or two cases. 89% schools are free from extremist problems.

(13) 55% schools teacher opinion is that they do not have any professional problem. But 39% schools teacher are sometimes facing professional problem. 6% schools teacher are always suffering from the problem as stated.

(14) Only 22% schools are there where there is no shortage of science teacher. 38% schools are sometimes facing shortage of science teacher. But 40% schools are always suffering from scarcity of science teacher. Only 40% schools are suffering financially to run the science education programme. 38% schools are running science programme occasionally. But 22% schools are not at all suffering to run the programme.
It is found that 54% rural and 19% urban schools do not have any laboratory. 10% rural and 38% urban schools have only three laboratories. Only 36% rural and 43% urban schools have only one or two laboratory/laboratories.

It is also observed that 29% rural and 31% urban schools library are suffering from financial problem. 52% rural and 40% urban schools library are suffering from infrastructural problem. Only 19% rural and 29% urban schools do not have any such kinds of problem as stated.

It is also found that only 2% rural and 12% urban schools student fall in high income group. 26% rural and 57% urban schools student belongs to middle income group. 72% rural and 31% urban schools student are suffering from economic problem.

62% rural and 64% urban schools do not have sufficient teaching staff. 38% rural and 36% urban schools are facing financial problem. According to head of the institute, 41% rural and 45% urban schools are having lack of teaching staff, 42% rural and 33% urban schools are suffering from financial scarcity, 18% rural and 22% urban schools are facing extremist problem.

It is found that in 64% rural and 88% urban schools teaching aids are available. But most of the schools (95% rural and 74% urban schools) instructional aids are either model or chart. There are very few rural schools (5%) where audio-visual aids are available whereas the percentage is 26 in case of urban schools.

According to the observation science practical accommodation is available only in 24% rural and 60% urban schools. In 76% rural and 40% urban schools there is no scope for science practical accommodation. On the other hand it is found that only in 31% rural and 60% urban schools more accommodation provision is being made for science practical. But no provision is being made in 69% rural and 40% urban schools.

There are 19% schools where sufficient fund is not allotted for conducting science activity. 63% schools are sometimes getting fund for science activity and 18% schools are always getting fund for the purposes as mentioned.

24% schools are not able to continue science education programme due to financial crisis. 40% schools are arranging programme occasionally. Only 36% schools are always financially sound for conducting science related programme.
(23) There are only 56% schools where either govt. or private management is always thinking for the development of science education. 40% schools management is thinking sometimes about science progressive programme. Only 4% schools are there where this type of programme is not encouraged by the management.

(24) In 34% schools no arrangement is taken for teacher regarding familiarizing of modern science education. 54% schools are sometimes taking arrangement for the purposes as stated. Only in 12% schools science familiarizing programme is arranging regularly.

(25) Except one or two cases, there is not at all any problem of medium of instruction as well as language problem in student teacher interaction. Moreover there are 54% schools where there is no communication problem. 34% schools are sometimes suffering from communication problem and 12% schools are situated in a remote area where there is a great instant of communication problem.

(26) There are 55% percentages of school where teachers find no professional problem while teaching. But 39% schools teachers are sometimes having some professional problem and 6% schools are always suffering from this type of problem.

(27) The researcher also finds the interest of the students towards science education and also their performance in science subjects. It is found that 38% rural and 12% urban schools students are showing low interest in science education. 55% rural and 71% urban schools show average interest in science. Only 7% rural and 17% urban schools students are showing greater interest in science education subjects.

(28) So far performance is concerned only 33% rural and 7% urban schools students’ performance is poor. 64% rural and 88% urban schools students’ performance is satisfactory. Only a few percentage of students’ performance is good (3% rural and 5% urban schools).

(29) According to teacher’s point of view the laboratory scenario of the schools are not satisfactory. There are 43% schools where there is always a shortage of science laboratory material. 38% schools are getting materials occasionally. Only 19% schools do not have any such problem.
(30) 40% schools are always suffering from science teacher. 38% schools do not have sufficient science teacher. In 22% schools only science teacher is available as per requirement.

(31) In 25% schools there is always an accommodation problem for science education. In 37% schools sufficient accommodation is not available. But in 38% schools there is no such problem.

(32) There are 49% schools where library is not fully equipped with all facilities. About in 37% schools library has no proper infrastructure. Only there are 12% schools where library has all facilities.

(33) There are 19% schools where management is not providing any fund towards the development of science education. 63% schools are sometimes getting financial help from their authority. 18% schools do not have any problem regarding fund.

(34) In 34% schools no arrangement is taken regarding familiarizing of science education for science teacher. Only in 54% schools some activities are taken into consideration. 12% schools are always arranging different kinds of programme for the development of science education.

**IX. Methodology & Evaluation**

(1) So far teaching methodology is concerned it is observed that 55% rural and 57% urban schools are following lecturer method, 31% rural and 29% urban schools are following demonstration method in teaching instructional process. Only 14% rural and 14% urban schools are following laboratory method in teaching learning situation.

(2) Result indicates that 81% rural schools and 60% urban schools are evaluating only through written examination whereas 14% rural and 38% urban schools are following written as well as practical examination. Result predicts that there are only 28% schools where there is a provision for two to four science classes for each class per week. There is only one to two science classes’ provision per class per week for the remaining percentages of school.

(3) It is observed that 79% rural and 81% urban schools are following lecture method of teaching. A very few percentage of schools are using either experimental (14% rural and 17% urban schools) or investigatory (7% rural and 2% urban schools) method of teaching.
(4) As maximum schools belong to Bengali medium, medium of instruction is Bengali in 96% rural and 79% urban schools. Few percentages of schools are there where medium of instruction is either English (2% rural and 12% urban schools) or Hindi (2% rural and 9% urban schools).

(5) Regarding evaluation and preparation of question paper are concerned it is found that 93% rural and 95% urban schools are taking written test as a type of evaluation.

(6) So far question paper framing is concerned 71% rural and 79% urban schools are using teacher made question paper and remaining percentage of schools are following general type question paper. It is observed that 90% rural and 93% urban schools are taking two terminal examinations as evaluation purposes. Remaining percentage of schools is taking three terminal examinations.

**X. Popularizing & Familiarizing Science Education**

(1) It is being observed that different arrangements are taken by different schools regarding popularizing and familiarizing science education. 43% rural and 55% urban schools are taking arrangement for science fair. 33% rural and 43% urban schools are concentrating on science quiz. 24% rural and 2% urban schools are not taking any arrangement regarding popularizing for science education. 41% rural and 57% urban schools are providing facilities to the teacher for training. 12% rural and 33% urban schools are arranging workshop for teacher. 48% rural and 10% urban schools are not taking any arrangement regarding the development of science education.

(2) Different kinds of activities are being taken into consideration for popularizing science education for science students. Among them 66% rural and 86% urban schools are arranging science excursion programme. Remaining percentage of schools is taking either entertainment television (ETV) programme or interactive television (ITV) programme. Different schools are arranging outdoor visit for the development of science education. For instance, 45% rural and 38% urban schools are arranging for visit to science city and science museum as outdoor programme. Remaining percentage of schools is taking either visit to research centre programme or visit to radio station, TV station, telephone exchange etc. 83% rural and 95% urban schools are showing interest in arranging science fair for student. Remaining percentage of schools is organizing either science club or celebrating the birthday great scientist.
(3) It is observed from the result that 93% rural and cent percent urban schools do not have any problem regarding seating arrangement in classroom. Remaining percentage of rural schools has no seating arrangement.

(4) It is also observed that cent percent rural and urban schools have nice writing arrangement as either black board or white board.

(5) Result reveals that different schools have taken different arrangement about popularizing and familiarizing modern science education. It is found that 52% rural and 69% urban schools are observing that kind of programmes which are related to awareness about superstition and pollution. 29% rural and 21% urban schools are very much careful about neat and cleanliness. 19% rural and 10% urban schools is observing programme regarding the use of first aid to the wounded people. On the other hand about 67% rural and 74% urban schools are arranging seminar on science education development. 21% rural and 21% urban schools are arranging workshop programme. 28% rural and 31% urban schools are taking summer school programme for the familiarizing modern science education.

XI. About Techniques of Searching Talented Students

(1) Result finds that schools are using different technique for searching talented students and accordingly they are taking necessary arrangement for them for science popularization. 52% rural and 40% urban schools are following class teaching for the above purposes. 33% rural and 31% urban schools are following through science based activity. Remaining percentage of schools is following guidance and counseling programme for searching talented students.

(2) Different activities are taken into consideration for these talented students. It is found that 26% rural and 45% urban schools are taking extra class, 33% rural and 31% urban schools are providing reference books and study materials etc. 41% rural and 24% urban schools teacher are guiding the student outside the classroom as per their requirement.

(3) Moreover 26% rural and 12% urban schools are organizing National Talent Search Examination (NTSE), 21% rural and 24% urban schools are arranging Jagadishchandra Bose National Talent Search Examination (JBNSTSE) and 53% rural and 64% urban schools are conducting Science Olympiad examination for evaluating their talents.
(4) Result finds that schools are taking different techniques for the development of scientific temper and motivate students towards science education. Only 12% rural and 12% urban schools are following high class teaching method for creating scientific temper among the students. 40% rural and 24% urban schools are following appropriate curriculum for science subject. 48% rural and 64% urban schools are trying their level best to fulfill students demand according to their requirements.

(5) For motivation 52% rural and 40% urban schools are providing teaching as per existing situation. In 21% rural and 21% urban schools students are engaged in science related co-curricular activities. 27% rural and 39% urban schools are using improvised teaching model while teaching for developing student attitude towards science education.

XII. Manpower Relation

(1) Researcher finds the activity of the human resource of the school towards science education. It is observed that around in 87% schools, relation between head of the institute and teacher is sound. In 11% schools the above relation is up to the limit. But in 2% schools the relation between them is not at all good. In 92% schools student-teacher relation is good. In 8% schools the relation is sometimes out of control due to different reasons. Teacher-guardian relation is excellent in 85% schools though there is a 13% school where the relation is some extent bad. In 2% schools the above relation is not at all good.

XIII. Science Materials

(1) There are 40% schools where teaching aids are always available. In 48% schools sometimes science teaching aids are purchased for special purposes and in 12% schools there are no teaching aids.

(2) Only in 25% schools students are always motivating towards the preparation of improvised teaching aids. In 57% schools this activity is taken for any special occasion. In 18% schools there exists no such practice at all.

(3) There are 42% schools where there is always a shortage of books in the library. In 37% schools sometimes students are getting science books from the library. In 21% schools there is no such problem.
(4) In 43% schools there is a huge scarcity of science materials in the laboratory. In 38% schools the condition of the laboratory is satisfactory. Only in 19% schools there is no such problem.

(5) Science books are available in the area of 46% schools. Sometimes students of 33% schools are getting text books from their locality. But this facility is totally absent in 21% schools. There are 49% schools where there is no problem with science text books so far language or printing matters are concern. In 43% schools sometimes problem arises with either printing or language. In 8% schools there is always a problem with science text books.

(6) It is found that 79% rural and same percentages of urban schools are using useware (all hardware and software components of a technical system) while teaching. A very few percentage of schools are using either software (17% rural and 12% urban schools) or hardware (4% rural and 9% urban schools) in teaching learning process. Around 95% rural and 93% urban schools are using model and chart as teaching aids. A very less percentage of schools are using either audio-visual (5% rural and 2% urban schools) or audio (0% rural and 5% urban schools) aids as teaching aids.

(7) So far selection of science book is concerned it is observed that in 17% rural and 10% urban schools science book is selected by head of the institute. In 57% rural and 57% urban schools it is selected by science teacher but in 26% rural and 33% urban schools it is being selected by both of them.

(8) It is also observed that what should be the matter of science book is prepared by different education commission. For instance, in 17% rural and 7% urban schools science book is prepared as per the guideline of National Education Commission (NEC). 62% rural and 33% urban schools believed that science book is prepared as per the recommendation made by State Education Commission (SEC). But 21% rural and 60% urban schools think that it is prepared as per the recommendation made by state education commission (SEC) and National Education Commission (NEC).

(9) As maximum schools are Bengali medium, it is found that 93% rural and 78% urban schools are using Bengali version books for science subjects. Remaining percentage of
schools is using either Hindi (2% rural and 10% urban schools) or English (5% rural and 12% urban schools) version science books.

(10) It is also observed that 62% rural and 57% urban schools are following State board publication books. Remaining percentage of schools is prescribed either state council educational research and training (SCERT) (26% rural and 29% urban schools) or national council of educational research and training (NCERT) (12% rural and 14% urban schools) publication books for science subjects. According to teacher’s point of view it is found that 24% rural and 10% urban schools are following national council of educational research and training (NCERT) published book, 24% rural and 19% urban schools are following state council educational research and training (SCERT) published book and 52% rural and 71% urban schools are following state local board (SLB) published books.

6.3 Conclusion:

Every child has the capacity to learn and is endowed with one or the other talent that needs to be identified and nurtured. Each child needs to be motivated and encouraged to perform even better and thus move forward towards the goal of excellence. Classroom teaching-learning becomes relevant and understanding of concepts becomes easy when the children are able to appreciate the implications of classroom instructions and can relate them to real life situations. Discussion in smaller groups, participatory development of the lesson, involving children in decision making and allowing them to think, find and discover can be some useful strategies in this context. Use of local resources, utilizing multiple media, referring to journals and reference books, exemplifying through folk tales, role play, dramatics, seminars and group discussions have tremendous potentialities. These develop imagination, listening skills, a culture of reading and self-study. Imagination and originality are the key words in the present day context. Balanced development of competition and cooperation is desirable. The best dictum is ‘competition between the groups and cooperation within the group’. Teaching-learning is a multi-dimensional and complex process which has the capability of providing joy and satisfaction to the child. Once the children feel the joy and imbibe an
urge to learn more, they set out to a mission towards new and unknown horizons, which, in the long run, open up newer possibilities to further the cause of welfare of the larger community.

It is very important to properly state the findings of the study, conclusions of the investigation that the researcher had formulated. In stating the conclusion, positive as well as negative results should find place in the conclusion. In a nutshell the present position and status of science education is not satisfactory one among the secondary and higher secondary schools of Tripura. Students do not find enough education on science subjects. School authorities are facing different problems in conducting science activities.

**Following are the negative points that researcher finds in his study:**

1. Only 50% of the sanctioned post for science teacher had been filled up. In maximum schools there is no librarian as well as laboratory assistant. One third of the schools are running by teacher-in-charge.
2. Teachers are some extent fighting against professional problems. Students of rural area are lagging behind than students of urban area in the performance of science subjects.
3. It is found that libraries are not well equipped with all facilities. Libraries are having shortage of materials, books, journals, magazine etc.
4. Regarding science curriculum (standard, availability, framing, objectives etc.), it is found that views of head of the institute and science teacher is little bit different.
5. It is found that one-third of the schools do not have any laboratory or provision for it.
6. It is found that maximum schools belong to under state board (Tripura Board of Secondary Education) syllabus.
7. It is found that socio economic status of rural schools is miserable. Their performance in science subject and attitude towards science education are not satisfactory.
8. Due to shortage of teacher, student-teacher ratio is not maintained in schools.
9. In the locality of rural schools text books are not available.
10. 50% of schools are having a shortage of science materials.
11. 50% schools teacher think that science syllabus is framed on activity based and it is as per national education commission.
According to 51% schools, teachers are used for other purposes in school time.
Maximum schools are facing financial problem in conducting science activities.
Different types of activities like seminar, workshop, science fair, quiz etc. are arranged by schools for popularizing and familiarizing science education. But in this regard, the percentage of school is very low.
Maximum schools are using teaching aids which are made of manually. A very few percentage of school is using technology based teaching aids like computer, LCD, OHP etc.
So far method of teaching is concerned maximum school teachers is using lecture method for science teaching.
For evaluation of science subjects, traditional examination system exists in most of the schools.
As maximum schools are Bengali medium, teachers are using local language (Bengali) for instruction. For evaluation purposes they are using teacher-made question.

On the other hand following are the positive points that researcher finds in his study:

(1) The result reveals that there is not at all any communication problem while going to and coming from the school.
(2) It is also found that there is almost decentralization of schools among the rural and urban areas.
(3) It is observed that there is no shortage of quality and trained science teacher.
(4) It is fact that schools have sufficient number of class room for different activities.
(5) There is no language problem in student-teacher interaction.
(6) There is no seating problem in the school. Almost in every school there is a nice arrangement for writing either in black board or white board.
(7) Different strategies are taken by school for talented science students’ namely extra class, guidance, conducting different competitive examination (NTSE, JBNSTSE, and Science Olympiad), providing study materials etc.
(8) Schools are taking different techniques for developing scientific temper among the students and motivate them towards science education. Different techniques are high class teaching method, following appropriate curriculum, trying to fulfill students demand, engaged them in science co-curricular activities, preparing improvised model etc.

(9) Relation between head of the institute and science teacher, science teacher and student, teacher and guardian is sound. In most of the schools, guardians are helping to the schools for it’s all round development.

(10) In most of the school science book is selected by head of the institute and science teacher together. 60% schools are following local board publication books.

(11) Different entertainment activities are carried out in science programme namely ETV, ITV, outdoor visit, visit to science city & science museum, radio station, T.V. etc.

6.4 **Suggestion for Development of Science Education:**

Taking an overall view, our problems in science education are gigantic. About half our population is illiterate. There are then the problems of the handicapped, the underprivileged and education of girls, especially those in rural areas. We have to find our own “penicillins” by breaking up our problems. The hammer must fall sooner or later on the anvil, thus giving the whole nation an Indian Tradition of science teaching. So it is a problem for all: researchers, administrators, science teachers and students too. They should learn to master the stimuli rather than the responses. It is also highly desirable to draw appropriate lessons from international experiences for our benefit.

Therefore, it is time to dream, time to visualize, time to act, time to know, time to accept and reject, time to remember and time to reach the infinite by developing the scientific and technical capabilities of our children, an entirely new race to be run for winning new posts in science education in the next century.

Following are the suggestions for the development of science education in school level with respect to the feedback obtained by the researcher in his work.

(1) Students and teachers must follow the information available on website regarding science education to keep them update.

(2) Best science books should be prescribed and made available in the school libraries.
(3) To raise the performance of science subjects, syllabus of different boards should be uniform.
(4) Competitive environment is helpful for science learning.
(5) Free coaching should be provided for backward and talented students.
(6) Teachers should update their knowledge and proficiency.
(7) Students should follow text books and not the guide books.
(8) Every school must have qualified science teacher for secondary as well as higher secondary level.
(9) Every institution should have library and laboratory facilities in all respect.
(10) School authorities should be provided financial assistance for conducting different scientific activities for the development of science education.
(11) Science curriculum should be framed as per the recommendation of national education commission.
(12) Students whose socio-economic condition is bad should be helped in all respect so that they can continue their science learning without any problems.
(13) Teacher should take all necessary steps to develop scientific attitude of the students towards science learning.
(14) For concretization of concept, teaching authority should use improvised instructional materials while teaching.
(15) School building should not be used for other purposes at school time. Also it should be taken into consideration that teacher should not suffer from any professional problems.
(16) Evaluation system should be modified.
(17) Teaching methodology regarding science teaching should be change.
(18) Students should be encouraged in different kinds of activities for popularizing science education.
(19) School management should take necessary arrangement for science teachers regarding popularizing and familiarizing modern science education.
(20) Implementation of technology based teaching materials should be confirmed by concerned authority.
(21) Vacant post should be filled up immediately for all round development of the institution.
(22) The curriculum should be flexible to meet aspirations of different social groups and studies should be conducted locally and nationally to bring desirable reform in science education.

(23) Science curriculum and syllabus should be available in all schools.

(24) Students should be motivated towards the preparation of improvised teaching aids.

(25) Linguistic and printing problem of text book should be minimize.

6.5 **Recommendation for further Study:**

The researcher had admitted that because of certain limitations of the present study, the conclusions and major findings drawn might not be absolutely dependable. But this work is the first ever in Tripura to find the present scenario of science education in secondary and higher secondary level of schools in Tripura. So, from this corner, it had much importance. But, as the study could not touch all the aspects of science education, further studies is needed to look into different aspects of science education. Some of these are mentioned below.

(1) Research should be carried out on primary level school in regard to the development of science education.

(2) Studies may be conducted on the position and status of science education of different boards such as T.B.S.E, C.B.S.E, and I.C.S.E.

(3) A national survey may be conducted to compare the development of science education since independence between the high and higher secondary schools of different states in India.

(4) Comparative study may be done about the present scenario of science education between different states of North-Eastern region in India.

(5) Studies may be conducted on the position and status of science education in different areas such as rural, urban etc.

(6) Studies may be done about the impact of science education in secondary and higher secondary level of students.

(7) Investigation may be conducted on science curriculum syllabus and text book on secondary and higher secondary level.
(8) Research may be conducted on outcomes of science education with regard to scientific temper, attitudes, skills and interests.

(9) Studies may be conducted on teaching strategies for talented students in school level with respect to science subjects.

(10) Research may be conducted on professional interest in carrying out policy studies in science education.

(11) Studies may be conducted on dimensions of the instructional and nurturing effects of various types of instructional practices in science education today.

(12) Research may be conducted on emerging vision of an education in science with special reference to science and technology which may be brought into the real life of the student.

(13) Research may be conducted on to assess the facilitative effect of computers in science instruction in terms of learning outcomes, learning time and attitudes.

(14) Research may be conducted on primary level students’ attitudes towards science.

(15) Studies may be conducted on gender issues in science teaching with special reference to Tripura.

(16) Studies may be conducted on status of science teaching in North-Eastern schools for the visually impaired.

(17) Research may be conducted on reforms in science education in the context of education for all with special reference to North-Eastern states of Tripura.

(18) A study may be conducted on problems of science education and attitude of students’ towards science in high and higher secondary schools of Tripura.

(19) A comparative study may be conducted on minority students’ attitude towards science and their achievement with special reference to Tripura.

(20) Research may be conducted on developing and using an inexpensive science kit for the elementary students in primary schools in Tripura.

(21) Research may be conducted on the role of an educational institution in fostering science education.

(22) A study of the attitudes of students and teachers towards science educational bureaucracy.

(23) An investigation into the effects of science educational development in the village.
(24) An investigation into the role of science education in socio-economic development of a small compact area.

(25) A study of regional disparities in the field of science education.

(26) A survey of the physical facilities of schools with regard to the development of science education and their effective use.

(27) Research may be conducted on the problems of school finance in the aided schools of Tripura with respect to the development of science education.

(28) The role of the school in formulating its science curriculum, syllabus, books and other facilities.

(29) A survey of the methods of science teaching employed by teachers in the classroom.

(30) An examination of the courses of study in science at the middle stage of school education.

(31) An evaluation of science clubs and science fairs from the point of view of the development of creativity in children.

(32) An investigation into the minimum knowledge of science required for successful living in Indian society and the time required completing that course.

(33) An investigation into the most effective content of science courses for students of varying abilities at the secondary stage level.

(34) A study of the ways and means to co-ordination between mathematics and science courses in secondary schools.

(35) A survey of the professional equipment of general science teachers in the schools of Tripura.

(36) A study of the attitudes of students’ which are essentially developed by the study of science.

(37) An investigation into the causes of reluctance on the part of girls to take to science and mathematics courses.