CHAPTER-VII

CONCLUSION

Manipur, although small in size with a population of 22,93,896 according to 2005 census, were classified into nine districts for administrative and commerce. The districts were Imphal east, Imphal west, Bishnupur district, Thoubal district, Chandel district, Churachandpur district, Senapati district, Tamenglong district, and Ukhrul district.

Out of nine districts, the present investigation was confined to four valley districts, out of these four districts, two were urban based and two were rural based. The population of these four districts were 1,416,766 according to 2005 census, in the Imphal west were 394876, in the Imphal east were 4,44,382, in the Bishnupur district were 2,08,368 and in the Thoubal district were 3,64,140.

The state had 4089 schools under management. Out of this schools 2117 were on the valley areas and remaining were in the hilly areas of Manipur. Again, out of this total number of schools in the valley districts, ninety were higher secondary schools, high schools were 376, Junior high schools were 431 and primary schools were 1220.

Like other states, Manipur followed the structural pattern of education as laid down by Ministry of Human resources of government of India. The structural pattern was IX-XII with total number of thirty schools in the valley districts of Manipur, XI-XII were nine, VI-XII with eleven, I-XII were twenty nine, III-XII were five and XII were only six.
The number of teachers employed were 29,562 under different managements, like state government, private aided and private unaided management. The number of teachers under this different management were 14,339 under state government, 2,938 were in aided, 12,285 were in unaided bodies.

The number students enrolled during the period of study were 6,61,436. Out of this 21314 were in the classes from XI-XII, 62,869 were in the classes from IX-X and 5,77,253 were in the classes I-VIII.

Out of total number of students enrolled under different class structures, like high and higher secondary schools, senior basic schools, primary and upper junior basic schools. And, 4,04,149 were in the valley districts and 2,10,627 were in the hill districts.

Out of total number of teachers in the schools, 10259 were trained teachers and remaining were untrained teachers. Again out of this trained teachers, 6359 were males and 3900 were females. Similarly, out of total numbers, untrained teachers were 11,337 male and 7,966 were females.

Out of total number of teachers in the schools, the investigator found out 855 science graduate teachers, in the valley districts of Manipur. Although, there was no proper record for classifying the number of teachers employed as science graduate teachers or arts graduate teachers or any categories, the investigator took the pain of consulting the records maintained by the Statistical Department of the Directorate of Schools of Government of Manipur.

With the above statistical data and information, the investigator made an attempt to review the related literature concerning the problems
affecting the attitudes of the science graduate teachers. This was done to enhance knowledge in the area and also to enable to keep the up-to-date information, relating to the present study.

Research took advantage of the knowledge which had accumulated in the past as a result of constant human endeavor. There would had been very little progress without systematic research. A number of research scholars had made a sincere effort to go through the professional literature related to the study. A careful review of the research journals, books, dissertations, thesis and other sources of information on the problem to be investigated was one of the important steps in the planning of any research study.

The study made by Agarwal on job satisfaction of teachers in relation to some demographic variable and values; Anilkummar on perceived stress of teachers in relation to job satisfaction and certain personality characteristics; Begum on problem of teaching new science syllabus for standard VII in Andhra Pradesh and their impact on pupil achievement; Bhandarkar on the study of polytechnic teacher’s attitude towards teaching profession and its correlates, government polytechnic; Das on a study of secondary school teaches job satisfaction and job motivation in Cuttack District of Orissa, were studied minutely.

In relation to the study, made by Desai on a study of the outstanding problems of teachers of standards V to VII of the Marathi language side of Municipal primary school of Bombay; Ganapathy on self concept of student-teachers and their attitude towards teaching profession; Gupta on study of attitude of teachers towards environmental education; Hans on teachers’ perception of problem behaviour: a cross
cultural study between Germany and South Korea; Jaleel on bureaucracy of college teachers and their attitude towards teaching profession; were minutely reviewed.

In respect to the study, made by Lalsangliani on an investigation into the socio-economic and academic problems of high school teachers of Champhai sub-division, Mizoram; Mishra on a study of the attitude of teachers working in government-aided conventional sanskrit vidyalayas of Varanasi towards teaching profession; Maheswar on prediction of teaching competency from creativity, intelligence and teacher attitude; Malviya on a study of attitude towards science and interest in science of school-going adolescents; Malhotra on a critical study of the existing facilities of science teaching and construction of evaluation instruments for its supervision in different types of secondary schools in Delhi; Mary on attitude towards teaching and job satisfaction of woman teachers in Coimbatore; Mathur on attitude of teachers towards creative learners and teaching, were reviewed.

The study made by Maurya, on a study of the relationship between teachers’ attitude and teachers efficiency of university and pre-university lectures; Mohanty on a study of staff relations in higher secondary schools; Mohapatra on problems of secondary school teachers, a comparative study of government and private school teachers; Muddu on a study of the problems of secondary school teachers of Nalgonda district in teaching biological, were also studied minutely.

In respect to the study made by Murugesan on a critical appraisal of life oriented education implemented in the secondary schools of Anna district; Nongrumm on a study of job satisfaction of secondary school
teachers in Shillong and Leadership characteristics of Head/Principals; Padmanabhaiah on job satisfaction and teaching effectiveness of secondary school teachers; Pathan on teachers’ and students’ attitude towards self-education, each other, management and parents in a few single sense and co-educational secondary schools in Pune city, were also reviewed.

Another study made by Rama on job satisfaction, attitude towards teaching, job involvement, efficiency of teaching and perception of organizational climate of teachers of residential and non-residential schools; Ramchandra on an enquiry into attitudes of student-teachers towards teaching; Rao on scientific attitude of in service and pre-service science teachers; Ray on a study of the attitude of teachers towards pupils and their job satisfaction; Reddy on teaching aptitudes and attitudes of secondary school teachers in Andhra Pradesh and also on a study of verbal classroom behaviour of high school science teachers in relation to certain personality characteristics and their attitudes towards pupils and certain classroom practices; Sharma on a study on attitude and frustration in relation to caste, sex and residential area among primary and secondary teachers, were also reviewed.

The study made by Shachi on relationship of selected psychological variables with attitude towards teaching of traditional and model school teachers; Sharma on a study of scientific literacy, attitudes towards science and personalities traits of students and teachers; Singh on attitude of teachers towards creative learning and teaching; Sekhar on job satisfaction of graduate teachers in Coimbatore were also studied.
Another study made by Santanu, on attitude of secondary school students towards physical education; Saran on study of teachers’ attitude towards teaching profession on certain personality variables as related to their levels of education and amount of experience; Saraswat on a study of attitude of trained high school teachers of Aligarh towards their professional training and the students perception of their teachers, Shandilya on a study of frustration in teachers working in central government, state government and government aided privately managed schools of Kanpur city, Sharma on using the blackboard in classroom teaching, were also reviewed.

In regard to the study, made by Prabhakar on teaching behaviour of science teachers; Triveni on a study of teaching efficiency in relation to job satisfaction and socio-economic status of secondary school teachers; Som on teachers’ personality pattern and their attitude towards teaching and related areas; Srivastava on attitudes of secondary school teachers towards teaching of population education in schools; Srinivasan on personality traits of primary teachers and their attitude towards teaching, were also studied.

In respect to the study made by Sundarayan, on an evaluation of the teaching of Biology of higher secondary stage in Tamil Nadu; Tapodhan on a study of professional, attitudes of secondary school teachers of Gujarat state; Tassew on classroom verbal, behaviour of teacher trainees in Ethiopia in relation to their intelligence self concept and attitude towards teaching; Thakur on assessing teaching behaviour through personality characteristics; Thomas on the determinants of teachers’ attitudes to integrating the intellectually handicapped; Vasudev on the
study of verbal behaviour of teachers in relation to democratic attitude and personality, were also reviewed minutely.

The study was designed with the objective of studying the attitude of the Science Graduate Teachers in the schools of the four valley districts of Manipur and the investigator also tried to study the perception of the problems of Science Graduate Teachers in the different schools of the four valley districts of Manipur. Sampling was done on 400 Science Graduate Teachers, out of 855 Science Graduate Teachers in the four valley districts of Manipur.

Hypothesis were also framed on the existence of significant difference between male and female, rural and, above ten years teaching experience versus less than ten years teaching experiences and highly qualified versus lower qualified Science Graduate Teachers in relation to their perception of problems and in their attitudinal aspects in the schools of valley districts of Manipur. The hypothesis were also tested with the application of ‘t’ test and other relevant statistical tools.

The tools employed were Questionnaire Scheduled on Attitude and Problems of Science Graduate Teachers’ personal Information and Information Sheet for collection of other information about the teachers and the institutions of the four valley districts of Manipur.

The method of approach was Descriptive Field Survey. The study utilized on the Ahluwalias’ Teachers Attitude Inventory (TAI), in order to enable to explore the attitudinal aspects of the Science Graduate Teachers, in toto.
With the help of self made Questionnaire tools employed basing on the data and also with the help of Ahluwalias' Teacher Attitude Inventory (TAI), the study explored the problems faced by the Primary, Secondary Science Graduate Teachers in the field of course curricula, infrastructural development including laboratory facilities and scientific equipments. It also explored the problems concerning non availability of models, charts, demonstration materials, lack of training, state aids etcetera. Hence, the growth and development of science education in the valley districts of Manipur in the different schools depended entirely on the fulfillsments of the above infrastructures.

On the other hand, the attitudinal aspects including cognitive, affective and behavioral components of the Science Graduate Teachers were sometimes underemployed and not well placed. It also explored over utilization, frequent transfer and lethargy attitudes towards promotional matters, communication gap with the principal and administration. On the other hand, the study also explored, lack of library facilities including non availability of journals, teachers' guide books, reference books and development of co-curricular activities etcetera. It also explored on the lack of competition amongst the students in their respective examinations.

After collecting, organizing and scoring responses, the next step was organization and analysis of data, because the data had no meaning unless it was analysed and interpreted systematically and logically. Therefore, in order to interpret and analyse the data certain valid tools and techniques were to be employed to reach and get a reliable and valid conclusion. Analysis of data meant the studying of an organized materials
in order to bring for the inherent facts. And also the data were studied from many angles as far as possible to explore the new facts. The purpose of analysis was to convert and reduce data into intelligible and interpretable form, so that the research problems could be solved and studied the variables that could be compared and tested. Thus, the researcher could get a meaningful results or valid conclusions from the analysis. But at the same time, a systematic analysis required an alert, flexible and open minded attempt. On the basis of the analysis, the researcher interpreted the results into a intelligible and interpretable meaningful form. The process of interpretation status of what the results would be and what were their significances in solving the research problems and suggestion thereof, for improvement were required.

Interpretation follows a careful, logical and critical examination of the results obtained after an in depth analysis, keeping in view the limitations of the sample selected, limitation of the study and the tools used in the study. Item wise analysis was done for each of the four districts separately and cross wise district in regard to the responses given by the respective teachers, in order to enable to analyze the problem.

Item wise analysis was done for each of the four districts separately and cross district wise comparison was made in regard to the responses given by respective teachers. Analysis was made after administering Questionnaire Scheduled which consisted of 100 statements to the 400 sampled teachers, out of 855 Science Graduate Teachers. Sampling was done on random basis consisting of 100 teachers from each of four valley districts.
The investigator administered Questionnaire Schedule consisting of 50 statements for exploring attitudinal aspects to the 400 sampled teachers, out of 855 science teachers. These 400 sampled teachers were selected, on random basis consisting of 100 teachers, from each of the four valley districts. The statements given by the 400 teachers were arranged according to a five point scale basis of Likert. The scale was modeled as Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD).

The statement contained in the five point scale, was based on S.P., Ahluwalias' "Attitude Scale". All favourable statement were scored from maximum to minimum as 5, 4, 3, 2, 1 and all unfavourable statements from maximum to minimum as 1, 2, 3, 4, 5. The total scores obtained, on all the items measured a respondents favourableness towards the subject in the questions.

And for exploring the problems faced by the teachers the investigator employed self made Questionnaire. And problems areas as express by teachers were on instructional materials, text books and teaching aids in regard to Imphal east district. In this aspect 53% of the science teachers had given their opinion that the teaching learning materials were not available in the school. It was found that 82% science teachers had told that they were not getting any science journals and magazines. Again, 47% of the science teachers reported that they had satisfied the diagrams, pictures, prints, etcetera provided in the text books and other 53% science teachers showed dissatisfaction. The condition of text books, 62% science teachers were in favour of the text book regarding the manner of presentation and explanation and rest 48%
science teachers were not satisfied. Regarding the contents, 63% teachers told that the content of the text book was not written according to the child's need. Regarding the black board size, 65% teachers told that they had satisfied the condition of the blackboard.

From the above analysis, it could be concluded that the most of the schools in the Imphal East District were not provided with science teaching materials, teachers guide, science journals. Also it was confirmed that the condition of the text book regarding the quality and availability was not satisfied. In most of the government schools the conditions of black boards were in a worst situation, neither it could be used for writing properly, nor it could be read easily after writing. Therefore, proper steps should be taken up, to provide the essential requirement at the earliest in order to strengthen and enhance the quality of education and also to enhance teachers' knowledge in this field.

Another findings also made on the classroom situation, workload given to teachers, laboratories facilities, training programme, methods of teachings, evaluation. Findings also were made on the organization learning activities outside the classroom like organization of field trip, co-curricular activities etcetera.

Basing on the analysis, main findings were made for each of four districts, separately in regards to their problems faced by the teachers teaching science and their attitudinal aspects developed, out of their problems.

In case of Imphal East District in the attitudinal aspect there was no existence of significant difference between male and female; trained and untrained; the highly qualified and lower qualified, higher experienced
and lower experienced; rural and urban science graduate teachers regarding their attitudes towards teaching science.

And, in the case of Imphal West District, there was no statistically significant difference between male and female; highly qualified and lower qualified, higher experienced and lower experienced science teachers regarding their attitudes towards teaching science. But on the other hand, there was statistically significant difference between the trained and untrained; rural and urban teachers regarding their attitudes towards teaching science.

But in the attitudinal aspect of Bishnupur District, there was no statistically significant difference between male and female; higher experienced and lower experienced; rural and urban based teachers regarding their attitudes towards teaching science. But in the case of highly qualified and lower qualified; trained and untrained teachers, there was existence of statistically significant difference regarding their attitudes towards teaching science.

And in the case of Thoubal District, there was no statistically significant difference between male and female; highly qualified and lower qualified; higher experienced and lower experienced, trained and untrained science graduate teachers, regarding their attitudes towards teaching science.

From the crosswise analysis of different four valley districts of Manipur, it was found that there was no statistically significant difference amongst the four valley districts of Manipur, regarding their attitudes towards teaching science.
SUGGESTION

It is universally agreed that the role of the high school science teachers are very important and it plays a vital role to shape our youths in the classroom situation. And teachers’ personal qualities, educational qualifications, professional training and the place he occupies in the secondary school as well as in the community are the important factors which affect directly to the teaching learning process. Their social status, attitude towards teaching science, their salaries and general service condition are far from the satisfactory. It is absolutely necessary to improve their status and their service condition. In order to keep science teachers alive and improve to the new development concepts of scientific knowledge, seminars, workshops, conferences, refreshers courses, etc., should be arranged at the right time. Further to improve the academic and administrative mechanisms the following few points are suggested.

A fundamental concern of Science Research policy is the relative allocation priorities with reference to different sectors of scientific efforts, both in terms of subjects and in terms and in terms of operating agencies as suggested by the Education Commission Report of 1964. This is a problem which involves vital scientific issues, but it goes beyond science. It involves important economic and political considerations. The resource is men and material available at any live for resources and developmental are severely limited. This is so even for affluent countries. The number of able scientists and engineers is often the critical factor in determining the total volume of the resource and developmental effort. Difficult and sometimes unpleasant choices have to be made among the many competing on the use of the available talent and professional manpower.
This is inevitable and a responsibility which cannot be shirked. To lay down effective and operational priorities is not at all an easy thing. It needs a relatively well defined formation of the national goals and objectives, and it needs hard and courageous and imaginative thinking.  

In this regard the State needs to develop more number in science education in the colleges of Manipur particularly in the hill and rural districts for scientific development and its tempo. This could also be reflected in the statement given by the Education Minister in the opening day of the two day Seminar on development of education under sponsorship of University Grants Commission in one of the rural college of Manipur.

Although in some of the colleges science classes have been opened upto undergraduate courses there is still only one college meant purely for the science education in Manipur. Awareness and encouragement should also be made by the public and government for developing a scientific tempo amongst the general people of Manipur. 

The present study scientific Advisory committee to the cabinet cannot perhaps be considered to have effectively performed the function envisaged above no matter what its terms of reference are. The committee is mainly constituted to representatives of the important research organizations in the country. This makes to say the least an objective and critical examination of issues of national research policy difficult. The members are often too directly involved to be able to take and objective and detached view. In most of the advanced countries the top Advisory

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2 Source: Poknapham, a Manipuri local news paper, dated, the 13th Jan.,2008.
Committee is composed of people who have no 'Vested Interest' in a institution to defend or to fight for.

For science education various committees can be formed at different levels in the state on the line of the recommendations given by the Education Commission Report of 1964. A spade work can be formulated although it is too late.

On the line of the recommendations made by the education Commission Report for reorganization of the Scientific Advisory Committee be formed and reorganized and this should provide an effective secretariat with a professional component adequate to its tasks. The committee should be in a position to assess the broad scientific needs of the country including the universities and advise government on Science policy and allocation of total resources between different sectors of scientific activities. The task of this body should be to review continuously the national research policy situation.**3

Recently the Atomic Energy Department has undertaken a programme for research in radio astronomy and also in the field of molecular biology. The interest of the AEC in these field is to be welcomed. But it needs to be stressed that these fields of research should primarily be develop and supported in the university unless these be compelling reasons to the contrary.

It is time for the state, although it is too late to frame policies, on science education and make effort for development of scientific temperament. In this regard, while framing any state policy for the

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**3 Source: Same as **1.
development of science education in Manipur, the recommendations of the various commission on Education need to be referred.

1. Attempts may be initiated to organize co-curricular activities like science club, science exhibitions and science museum, in the school. Therefore, science teachers should have proper training to organize such activities.

2. High school science teachers' association may be formed at local level to exchange ideas and knowledge to solve academic problems relating to teaching learning process.

3. The science teachers may keep themselves always in contact with the bodies associated with science education such as state science society, SCERT (State Council of Educational Research and Training) and NCERT (National Council of Educational Research and Training). These will not only help to increase their knowledge but also give guidelines to solve their many academic problems.

4. Some schools may form a school complex or Association and they may share their materials, teaching aids, equipments among themselves.

5. Science graduate teachers may sit together at least a fortnight to discuss their academic problems and discuss the same with the head of the institution.

6. Science teachers should get enough time to prepare the lessons and to correct the home assignments.
7. At least one period in a week should be provided for showing experiment.

8. Science classes should not be overcrowded.

9. Students securing poor mark in the science subject should not be promoted to the next higher classes.

10. Adequate scientific infrastructure should be maintained.

11. Science teachers should be encouraged to organize co-curricular activities.

12. Number of science teachers should be increased so as to reduce their work load.

13. Every school should have at least an extra room of standard size laboratory with demonstration table.

14. The science period allotted in the time table should be enough to finish the course in time.

15. Adequate number of up to date syllabus, text books and journals related to science should be made available in the school library.

16. Curriculum should be constructed according to the needs and level of the learner.

17. Parents should participate in the school meeting to discuss the different issues of the schools.
18. They should cooperate to the science teachers and school authority.

19. They should check their children daily, regarding any difficulties in their home work or in any areas of learning materials.

20. They should keep their children mentally and physically strong and fit.

21. All the members of the society should take part in the school meeting to discuss the different issues for solving the problems.

22. Society should aware about the different problems faced by the science teachers.

23. Society should extent full cooperation to the high school science teachers and school authority.

24. Formulating a National Curriculum Framework for the higher secondary stage as well as development of new curricula and instructional package based on the semester pattern.

25. Improving considerably the physical and infrastructural facilities in secondary and higher secondary schools.

26. Reviewing afresh the existing system of pre-service teacher education for the secondary stage and formulating and implementing an improved teacher education system.

27. Transferring the role of the Boards of Secondary Education.
28. Strengthening the academic institutions and bodies concerned with research and development in the areas of curriculum, institutional materials and equipment for secondary schools and higher secondary schools.

29. A programme for construction of additional classrooms and laboratory facilities in schools to the extent they are deficient will be taken up. School education in mainly looked after by the State Governments and local bodies. If possible the central Government may consider supplementation of reasons.

30. Every school must have laboratories and other facilities as specified in the terms of recognition of the Board of Secondary/Higher Secondary Education to which it is affiliated.

30. As envisaged in the education policy, the core curriculum will play an important role in education consolidation. This will be followed by overall improvement in curriculum, the textual material, teaching practices and examination/evaluation methods.

31. Certain norms of performances must be laid down for observance but the administration, teachers, students and educational institutions.

32. Some immediate measures have to be taken to improve the working conditions of teachers and the conditions in which students study and live. Similarly, the essentials conditions which enable educational instructions to effectively play their role have to be fulfilled.
33. It will have to be ensured that the working of the education system is not undermined by the political bureaucratic and anti-social elements within or outside the educational system.

34. Grievances redressal machinery will be established on the line indicated in the section on teachers, to ensure that all their legitimate grievances and promptly attended to and they receive what is due to them.

35. Teachers in aided and private institutions are often subjected to indignities, extortions and under payments. This will not be tolerated and legal action taken as may be due.

36. All states Governments will formulate guidances/rules for posting and transfer of teachers. The central Governments will send general advice in the manner. Representatives of teachers will be consulted before finalization of the guidances/rules.

37. A comprehensive, open participatory and data-based system of teacher evaluation will be established. This system will take into account the work of the teachers in the area of research and innovation, regularly and attention to teachers and extension and social service activities.

38. A minimum threshold of facilities will be provided for all educational institution, special priorities being given to primary schools which have suffered from a greater neglect in the past.
39. Provisions of Executive committee/Syndicate and Academic Council level consultative bodies with teachers, in fairly large numbers, to discuss specific or general issues of impuring the institutional system.

40. Strong, unified and responsible teacher’s associations are necessary for the protection of the dignity and rights of the teachers as also for ensuring proper professional conduct of teachers.

41. Methods of recruitment of teachers will be recognized to ensure objectivity, merit and conformity with spatial and functional requirement.

42. Science Communication Forum (SCF), consisting of committed teachers and science activists should be formed for formulating ‘low cost or no cost’ methods of making science interaction.\textsuperscript{4}

43. The teacher competencies would be improved by attracting better qualified people to the profession as envisaged in the education policies and by improving the pre-service and in-service training programmes through strengthened secondary teacher training institution. While selecting teachers imparting training to the in-service training programme, preference should be given to the science teachers.

44. Publication of science journals in simple clear and lucid languages should be made available, to not only to the science teachers but also to the students. Efforts also be made to translate science journals to Manipuri medium so that the student can easily have knowledge about the scientific advancement and its importance.

\textsuperscript{4} Source: “The Telegraph”, from the “Classact”, dated the 12\textsuperscript{th} Jan., 2008.
The science teachers on the other hand, should not restrained themselves in transfer and posting policy in the hill areas. This matter needs to be considered seriously and most of the science teachers expressed unhappiness while posting to the hill areas.