CHAPTER - V

SUMMARY, SUGGESTIONS AND CONCLUSION

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SUMMARY, SUGGESTIONS AND CONCLUSION

This chapter incorporates the summary of the study presented above and necessary suggestions for further futuristic researches. At the end of the suggestions with few critical remarks and final observations the whole study is to be concluded in the following pages.

5.1.0 SUMMARY

Education in any country is a process to develop their people and society. For the overall development of the people and the society education plays a significant and indispensable role. To make education successful for the achievement of this noble and important goal, the teaching institutions and the teachers are quite responsible. Teaching is a very complex task which involves extensive interaction with a large number of students in the classroom. This job requires the teacher to understand clearly the complex characteristics of pupils, because he has to encourage certain form of behaviours of his students and discourage other forms of behaviours. Teaching involves various kinds of knowledge, skills, human relation techniques and a host of other attributes. Teaching helps in manipulating the variables of interaction, and these variables are classified

into three major classes: humane, environmental and curricular. Again, these variables are present in the context of classroom, school, home and community. The teacher is manipulating the variables of interaction to produce expected changes in students' behaviour. The science as a subject has comparatively more procedural to deal with the teacher who teaches it. To its nature and structure, teaching of science is not only unlocking the network of components, but also reflecting the way in which they get organised. The instructional methods, text books, teaching materials and such other facilities may contribute to a programme of improved classroom teaching, but these will not be effective in the absence of competent teachers. The teacher occupies a key position in the classroom. So, teacher plays a vital role to improve the quality of education. So it is the teacher and his teaching that can influence and improve, the quality of learning. Improvement in educational standards depends mainly on effective classroom teaching which depends on teacher competency.

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5.1.1 CONCEPT OF COMPETENCY

From the historical point of view, the term competency is not new. Killney (1952) used the term in his study, "The measurement of Good Teacher." Although educators have referred to competencies over two decades, still there is lack of agreement among educators to what constitutes competencies and how to describe them. According to Butlar (1978) "To some educators,

competency is seen as the application of knowledge; to others maintain that knowledge and skills constitute separate competencies. Some equate competencies with behavioural objectives; others see competencies as more global and general in concept. Some hold that competency is like a behavioural objective, demands a very specific set of knowledge, while others state that competencies address only broad process skills that are essentially content and knowledge free. Some claim that only directly measurable performance comprises competency; while others maintained that unexpected and unmeasurable learning outcomes are included in the concept of competency".

According to Flanders (1970), teacher effectiveness is an area of research which is concerned with relationship between the characteristics of teachers, teaching activities and their effects on the educational outcomes of classroom teaching. There is no clear-cut definitions of competency. The opinions are so different among teacher educators, and administrators, that each person can be said to have been using his own definition. On the other hand the ambiguities may arise due to lack of interest, adaptibility, determination and the initiatives taken by the educationist.

There are always been a quest for quality-education which warrants a set of competent teachers to translate the national objectives into action in the classrooms. Questions

automatically arise as to what this competency means and how it could be generated in the teachers ? This questions has attracted the attention of teachers,administrators, researchers and others, who are interested in the quality of education since several decades as it is directly related with the quality of education as well as the qualities of teachers.

Good (1973), defined competency and teaching separately; teaching is narrowly the act of instructing in an educational institution and teaching competencies are those skills, concepts and attitudes needed by teachers for the act of instructing in an educational institution.

Simpon and Brown (1977) in their study have identified validated seven fundamental areas of skills, representing basic science teaching competencies. The skills are :

(1) Knowledge of Science;   (2) Professional knowledge and attitude;   (3) Human relation skills;   (4) Planning Skills;
(5) Instructional skills;   (6) Management skills;   and
(7) Evaluation skill. With this seven areas of skills a list of 23 basic competencies for teaching secondary school science is prepared.

Close observation of Paradigm   it makes evidently clear that the teaching ability of teachers is restricted to the act of teaching, i.e. imparting of instruction by the teacher in the classroom.

Thus, it is essential to study what goes on in the classroom and how they are related with achieving the objectives. The effectiveness of teachers counts a great deal in translating these objectives into learning outcomes on the pupils. As such teacher competency plays a vital role in the entire teaching - learning process. The National Policy on education in Bangladesh attributes to teaching of science as a major thrust area for National Development. Hence, the competency of the science teachers of secondary education of the country is regarded as the most essential in the present day.

5.1.2 RELATED STUDIES

Research attempted to identify teaching competencies and studied the competencies of teachers in the teaching-learning situation in the classroom was considered for review.

A set of studies conducted on identifying teaching competencies like Olive (1972), Rayn (1969), Cooper, Jones and Weber (1973), Simpon and Brown (1977), Stone and Morris (1977) and other studies helped the investigator to arrive at the competencies which are essential to be a competent science teacher.

Studies related to teacher characteristics and personality factors like teachers' age, sex, academic qualifications, experience, training, interest in teaching, cultural background of teachers, job interest etc. quoted in Bar (1929), Cage (1963),

Debnath (1971), Robert (1988), and others. Some of the studies revealed that teachers demographic variables like teachers' sex and qualifications have an impact on competency and in some cases significant relation is also found with competency and such attributes. But in most cases consistency was not found to draw major conclusion.

Considering teachers classroom instructional process as a mode of effective teaching Ryans (1969), Welch (1983), Rosenshine Frust (1973), Natarajan (1984), and others found out the relationship of competencies with teaching methodology, students' discipline and control, knowledge of subject matter. Travers (1986) identified instructional competencies that are considered to be the most relevant for successful teaching. This study revealed that the planning competency is the most relevant competency followed by evaluation and management.

Studies conducted to identify effective and ineffective teacher through ratings, like Kaul (1972), Arora (1978), Chatterjee (1960) and others. Roys (1965) mentioned that in determining teacher effectiveness pooled judgements were likely to yield better result than individual assessments. Brays (1966) observed that student ratings of teacher remained quite stable over time. It has been found that rating singularly may not act as a reliable measure to judge teaching effectiveness but multiple rating for teaching effectiveness act as valid sources for rating teaching competencies.

Many of the studies in India and abroad had been taken to analyse the interactional situation in contact of classroom teaching. Flanders (1970), Maheswari (1976), Mossison (1968), Buch (1970) and others found the effectiveness of classroom behaviour of teachers. The gap that are found in many of these studies are in the category system itself.

Research on micro-teaching was the major dimension of studies and was the central focus of attention of researchers during 1960s and 1970s. Chudasama (1971), Passi and Shah (1974) Joshi (1974), Peterson (1973) and others found that micro-teaching was more effective than the traditional technique of teaching in the development of teachers' indirect behaviour. From the different studies it was found that training in the skills of demonstration and micro-teaching significantly increased teaching competency.

5.1.3 RATIONALE OF THE STUDY

The teacher occupies an unquestionable position in the entire process of education. The super structure of education will be weak and ineffective if a strong infrastructure in the shape of competent teachers are not embodid in the process of education. So, the Chief concern is to have teachers with certain degrees of competency to teach science to the secondary school students. Only a careful selection of competent teachers will have a positive effect of the system of education.

There is almost no impirical study in the field of teacher effectiveness in Bangladesh. Similar is the case that of India and abroad. Teacher education has suffered a great deal during the last 50 years and sustained research work.

The conditions of research on teaching in abroad have not been very different. The result of the studies conducted by Biddle and Ellena (1964), Popham (1969), Peterson (1973) and others bring the same fact to the force. In India too "teacher education is almost without a sound research base and it $_\wedge$ continue *would* to be so if it does not think of alternatives (Passi, 1976).

There are a few studies in the field of science education in Bangladesh. The study done by Aziz (1984) has pointed out that during the period of past twenty years, no in>itiative has been taken to assess the status of science education in the country.

So, a thorough inquiry about the competency of science teachers are needed and the relation between the competency and the different attributes of science teachers may help to develop better academic atmosphere in the school, and if it is possible to determine What characteristics are commonly associated with good teaching, the in-service teacher training programme could be directed towards increasing the desirable characteristics.

Though a number of related studies did lay a foundation of criteria of teacher competencies, still this study may bridge the gap in teacher education programme for teacher preparation. Apart from these, this study may help to know the status of science teaching in the classroom.

Therefore, the present study is an attempt to investigate competency of the science teachers in teaching of science, and to identify the relationship between the competency and inherent capacity of science teacher, his academic background, and environmental facilities both in home and school.

5.1.4 STATEMENT OF THE PROBLEM

"A STUDY OF TEACHING COMPETENCY OF SECONDARY SCHOOL SCIENCE TEACHERS OF DHAKA CITY".

OBJECTIVES OF THE STUDY :-

1. To identify the competencies of science teachers in teaching of science.

2. To identify the competent science teachers with the help of the rating scale constructed by the researcher.

3. To study the competent science teachers in relation to the different attributes such as inherent capacity, environmental facilities (home and school), and academic background.

Scope of the Study:-

1. As this study primarily falls in the scope of under-
standing the nature of science teaching process in
context of Bangladesh classroom teaching and as there
are about 200 secondary schools in Dhaka City, this
study has therefore been proposed to confine only to
25 percent of the schools.

2. As the proposed study was on the science teachers'
teaching competency only the science teachers of
those 50 schools would be included in the sample.
Hence, teachers involve in teaching other than science
subjects are not coming within the scope of the study.

Methodology of Present Study:-

The present study was an investigation of teaching
competency of secondary school science teachers of Dhaka City.
An outline of the steps and techniques which were followed in
conducting the research is given below:

Sample -

It has been proposed to take all the secondary school
science teachers of Dhaka City as the sample of the study.
Since the number of high schools in Dhaka City is 201, is a very
large number, so, in order to make it representative, the schools

were stratified as A, B, C, D and E according to the standard
of schools. Twenty five percent schools from each category
were randomly selected. All the science teachers of the selected
schools formed the sample of the study. Thus, the sample of the
study included 212 science teachers, 636 students (of standard
Ix and x) and 50 head-masters of those selected schools.

Tools -

The following tools were used by the investigator for
collection of data in this study.

1. A list of competencies in teaching of science (developed
    by the investigator)

2. Rating Scales -

    a. Teacher Self Evaluation Sheet (TSES) (to be filled
       in by the science teacher)

    b. Teacher Evaluation Sheet (TES-H) (to be filled in by
       the head-master)

    c. Teacher Evaluation Sheet (TES-P) (to be filled in
       by the pupils).

    All the tools were rated on a five point scale which
    is as under:

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

3. A semi structured interview Schedule.

Design:-

The present study was an analytical survey study. The first phase of the study was the identification of science teaching competencies, and development of rating scale to evaluate those competencies. The second phase of the study was drawing sample and the rating of sampled science teachers' teaching competencies. The third phase of the study was the interviewing of 30 sampled science teachers those who were at the top of the list in respect of competency scores. The fourth phase of the study was to find the relationship amongst different attributes such as inherent capacity, environmental facilities, and academic background of science teachers.

Data Collection:-

In the second phase of the study data were collected from 50 selected schools of Dhaka City. In accordance with the nature of data required, and as planning of the study, data were collected by different rating scales, viz.,(a) Teacher self evaluation sheet (TSES) (used by science teacher self); (b) Teacher evaluation Sheet (TES-H) (used by head-master for rating science teacher); (c) Teacher evaluation Sheet (TES-P) (used by pupil who were directly taught by the science teacher). In the third phase of the study data were collected from 30 topmost science teachers through the interview taken by the investigator himself with the semi-structured interview schedule.

Data Analysis:-

The rating scale contains 30 competencies. Each competency was sub-divided into several relevant aspects i.e. sub-competencies. The items were analysed by using the statistical treatment of measurements of Central Tendency and Variability.

To test the significance of differences among the rating of different groups of raters, t-test was applied.

The data from the interview of the selected 30 science teachers were analysed both qualititively and quantitatively. The statistical test, the measures of central tendency and the test of co-efficient of correlation were applied to find out the relationship between competency and other attributes of science teachers.

5.1.5 MAJOR FINDINGS

The 30 teaching competencies were grouped into six major areas. The group-wise findings are given below.

GROUP-I Competency in Planning for Science Instruction:

In the planning of science instruction ,viz,, selecting content, organizing content, selecting teaching strategies, choosing teaching materials, and structuring ways of evaluation the science teachers were placed by the raters in 4th category

i.e. 'often' category in the rating scale which means that the science teachers possess those competencies at higher level. But in identifying and classifying objectives according to domains the science teachers were placed in 3rd category, i.e. 'sometimes' category which indicates that the science teachers possess this competency at moderate level.

GROUP-II Competency in Presentation of Lesson:

In the presentation of lesson, viz., introducing lesson, explaining lessons, asking questions, making lecture effective, using chalk-board and closing lesson the science teachers were placed by the raters in 4th category, i.e. 'often' category which indicates that the science teachers possess thoss competencies at higher level. But in using methods in teaching; increasing students' participation, using demonstration, making home-work and assignment effective, and maintaining classroom discipline the science teachers were placed in the 3rd category, i.e. 'sometimes' category which means that the science teachers possess those competencies at moderate level. On the other hand in organizing and supervising field trips the science teachers were placed in 'rarely' category which means that the science teachers possess those competencies at lower level.

GROUP-III Competency in Developing Interest, Attitudes and Values among students towards science:

In developing students' attitude towards science the

science teachers were placed in 'often' category which indicates that the science teachers possess this competency at higher level. But in respect of developing interest and students' values towards science, the science teachers were placed at 'sometimes' category which means that the science teachers possess those competencies at moderate level.

GROUP-IV Competencies Related to Equipment, Chemicals and Teaching-aids:

In respect of using instruments and chemicals in the laboratory; and using teaching-aids the science teachers were placed by the raters in 'often' category which means that the science teachers possess those competencies at higher level.

GROUP-V Competencies Related to Laboratory Procedure and Technique:

In respect of conducting laboratory activities and experiments the raters placed the science teachers in 'some-times' category which indicates that the science teachers possess those competencies at moderate level. But in maintaining safety in the laboratory the science teachers were placed in 'often' category which means that the teachers possess this competency at higher level.

GROUP-VI Competencies Related to Evaluation:

In preparing examination result the raters placed the

science teachers in 'often' category which means that the science teachers possess those competencies at higher level. But in developing different test items; developing test items related to domain; and in using students' results for guiding the students the raters placed the science teachers in 'sometimes' category which means that the science teachers possess this competency at moderate level.

The Mean value of competency in (a) Developing different test items; (b) Developing test items related to domain; and (c) Using results for guiding the students is closer to the category 'sometimes' in the rating scale. This indicates that the science teachers of Dhaka City 'sometimes' or in other words occationally perform the activities under the competencies mentioned in this paragraph above.

7. From the analysis of three ratings i.e.from t-ratios among science teachers self, head-masters and students it can be concluded that the science teachers 'often' used competencies or on the other way the science teachers are highly competent on: selection of content; organizing content; using technique of evaluation; explaining lesson; asking questions; using lecture in the class; using chalk-board and preparing results. The 'sometimes' used competencies or on the other way the science teachers are moderately competent on: Increasing students' participation in the class; using demonstration in the class;

giving home-work and assignment; developing students interest; developing students' values towards science; helping students in the laboratory; developing tests items and using results for guiding the students. And the rarely used competency is organizing field-trip. Regarding remaining thirteen competencies the opinion of different categories of raters differ significantly. Thus, the science teachers' level of competency in respect of those thirteen competencies could not be concluded.

8. From the analysis of co-efficient of correlation the investigator arrived at the following conclusions.

a. The correlation between competency and science teachers' academic qualifications is 0.63. This positive significant correlation indicates that the teaching competency of science teachers substantially depends on the academic achievement of teachers.

b. The co-efficient of correlation between science teachers' competency and professional qualification is 0.77. This value is substantially significant. Thus, there is positive and significant relationship between professional training and teachers' competency.

c. The correlation between science teachers' experience and competency is 0.57. It is moderate. Thus, it is referred that there is positive relationship between science teachers' competency and teaching experience.

It indicates that the teaching experience of a teacher enhance his/her teaching competency.

d. The correlation between the teacher career advacement programme and competency score is 0.58, which is moderately significant. Hence, the career advancement programme help the teacher to develop their competency.

e. The co-efficient of correlation value 0.40 between science teachers competency and school environment indicates the low relationship between these two. Though it is not significant but from its positive / relationship it could be concluded that the school environment may help the teacher to develop their performance in the classroom.

f. The value of r = 0.56 between science teachers competency and interest in profession is moderately significant. Thus, it can be said that the teachers' interest in their profession has the significant relationship with teaching competency.

g. The co-efficient of correlation between teachers' job-satisfaction and competency is found to be 0.81. This correlation value is very high. This infers that the competency of science teachers' is highly positively correlated with teachers job - satisfaction.

h.   The value of r = 0.23 between science teachers home
environment and socio-economic status and the teachers'
competency is very low. This indicates that there is
no direct relationship between home environment of
science teachers and the teaching competency.

5.2.0 SUGGESTIONS

The following are the necessary suggestions for the
futuristic study.

1.   The present study on teaching competency of science
teachers has been conducted in a particular city of
the country. As competency is not an absolute concept
rather it is relative to other components, therefore,
it would be worthwhile to replicate the present study
in different parts of the country.

2.   The present study was confined to teaching of science
at the secondary school level. It would be worthwhile
to conduct research on similar lines taking sample
from other stages of education also.

3.   Similar studies may be needed to conduct for other
specific subject areas. Because those studies would
individually help to characterise competent teaching
in the respective subject areas.

4. The focus of the present study has been the process
    variable that characterise effective science teaching.
    It should be appropriate to identify the preesage and
    product variables that go with competent science
    teaching.

5. The present study has been done by taking the competent
    science teachers in consideration and tried to find out
    the relationship between competency of competent teachers
    with different attributes. Thus, it raises the important
    question as to what are the characteristics which disti-
    nguish the effective teacher from ineffective one. A
    comparative study could be conducted to find the answer
    to this question.

5.3.0 CONCLUSION

In the foregoing pages the present investigator duly
attempted in studying the problem that is "A Study of Teaching
Competency of Secondary School Science Teachers of Dhaka City"
in a comprehensive and critical way following the analytical
survey method. The present study was presented in the following
five Chapters.

Chapter I	Introduction
Chapter II	Review of Related Literature
Chapter III	Methodology
Chapter IV	Analysis and Interpritation of Data
Chapter V	Summary, Suggestions and Conclusion.

The First chapter contains the present situation of science education in Bangladesh, concept of competency, Paradigm, rational of the study, statement of the problem and scope of the study. The second chapter contains the related literature which is grouped under 5 different headings and the implicational remarks. The Third chapter incorporates the design of the study, identification of competencies, development of tools, collection of data and data analysis procedure. The Fourth chapter of the study contains data analysis, interpretation of results and discussion of results. The Fifth chapter of the study contains the summary of the study, major findings, suggestions for further studies and conclusion of the study.

The investigator with his limited scope and resources faithfully and adequately explored new facts and tried his best in illuminating those to the world of academicians. On the basis of appropriate findings of this study some relevant suggestions for conducting futuristic studies in this directions in order to explore other important aspects of the above said problem were also made above by the investigator. Though some aspects could not be covered because of the limitations of time and troubles., it is hoped that the studies in future would fill up the desideratum and as a result, new facts will come to light. It would help in achieving the noble ends of people and society for which education as a process plays a major role.