SUMMARY

Teacher education is the foundation stone of nation’s intellectual power which shapes the power profile of the nation in the community of the world nations, thus, it is rightly said that progress of a country particularly of a democratic country depends upon the quality to its teachers and for this reason, teaching is the noblest profession among all the professions. Doga (2010) emphasized on the fact that in a changing scenario one has to acquaint himself with life knowledge required for himself and his associates. All the formal and informal activities and experiences that help to qualify a person to shoulder the responsibilities as a member of the educational profession or to discharge his responsibilities more effectively. Teaching constitutes one of the major tasks of a teacher. Competency over this task of teaching is the essence of a successful educational system. The development of teaching competency among teachers necessitates a clear understanding of the term as well as the method for its assessment. With more than half a century of research in this area, there has been no consensus regarding the meanings of the terms ‘teaching’, ‘competency’ and hence ‘teaching competency’ itself. A competent teacher should have not only mastery over his or her subject matter, but his or her competency should be measured by learning students’. It is true that effective learning is the result of successful teaching, but successful teaching does not depend only upon the methods used, because methods and procedures of teaching are means but not end. The Indian Education Commission (1964-66) observed that all different factors which influence the quality of education and its contribution to national development, the quality, competence and character of teacher are undoubtedly the most significant.

It is not essential that popular teacher among her or his students is also a good or competent teacher, but a competent teacher is one whose students have better knowledge about the subject matter. Commonwealth Report (1974) also
states that, to be a competent teacher “the teacher must have knowledge of child development, of the material to be taught and suitable methods of teaching, or the culture of this pupils (which may not be his own and of some interest of his own), his skills must enable him to teach, advise and guide his pupils, community and culture with which he is involved, his attitudes should be positive without being aggressive so that his example is likely to be followed........as he transmits explicitly and implicitly the national aims and ideals and moral and social values”.

The effective teaching of a teacher plays an important role in making him or her competent teacher. The schools having good and effective teachers can succeed in reshaping the country. Good teachers are responsible for improving the quality of the nation’s citizens because the quality of a nation is judged by the quality of its citizens. The later is mostly determined by the educational system of the nation which in turn is decided by its teachers.

Educationists and educational planners in India have started realizing that only securing enough teachers will not do, as what equally important is securing the right type of teachers. Unless such teachers are found, the secondary schools cannot deliver the goods that are expected of them. Fundamentally the success of the secondary education does not depend either on the definition of aims, statements of objectives or discussion of subject matter but on the academic and professional preparation of the teachers, for the professional preparation of the teachers the study of attitudes held by them is very important. How a teacher performs his study, as a teacher, he is dependent to a great extent on his attitudes, values and beliefs. A positive favourable attitude makes the work not only easier but also more satisfying and professionally rewarding. A negative unfavourable attitude makes the teaching harder, more tedious and unpleasant. In addition to it, a teacher’s attitude not only affects his behaviour in the classroom but also influences the behaviour of his students. Moreover, effective and productive learning on the part of pupils can be achieved by employing teachers with desirable attitudes or by shaping their attitudes in the desired direction.

Teacher effectiveness plays a pivotal role in teaching learning process. It
being the hub of program needs, close observation and critical analysis as the
enrichment and effectiveness may have direct bearing on the learning outcomes of
the pupils. Only effective teachers are able to make their students realize the real
goal of education to their students. An effective teacher is indispensable even in
the most equipped system of education who teaches effectively may have the way
for progressive and productive society. Teacher effectiveness refers to the effect
that the teacher’s performance has on pupils. Like teacher performance, teacher
effectiveness depends in large on the context in which how the teacher performs.

JUSTIFICATION OF THE STUDY

The place and importance of a teacher in a society can never be
underestimated as he is regarded as the backbone of educational system, maker of
mankind and architect of the society. From the Hindu stand point, a child receives
second birth in the hands of the teacher who sharpens his habits, tasks and
character. He has to modify, reshape and smoothen. Book may teach a child, but a
teacher educates him.

Teacher is the pivot of educational system and an essential requirement for
a progressive nation. If teacher is not well adjusted then his intellect, imagination
and creative power may tend deteriorate. So, good adjustment of the teacher is
necessary for his better performance. Only well-adjusted teachers and positive
thinking teachers having work to their best. Such studies will naturally highlight
very fruitful and important suggestions.

Teaching is a skill. A skilled teacher generally should have higher teaching
aptitude. He can create the interest of the students in the classroom. With the
development and expansion of education in the country, teaching aptitude has
become an important factory and point in the context of the present era. Today
there is a great dearth of ‘Real Teachers’. Deterioration in the great standard of
education is the great problem. The present study examines teaching competence,
teaching aptitude towards teaching profession of the teacher. A nation cannot be
above the level teacher. The status of teachers in society tells us about the culture
and social environment. Teachers, who make the curriculum lively, give life to the whole system of education and such teachers’ teaching competency, teaching interest, teacher attitude affect the future of students.

In a developing country like India where even the target of full literacy is not achieved and where country has to continue steady progress of school children if the teachers are not competent then there is little hope in the bright future of coming generation. With incompetent teachers, it will be a difficult task to continue the progress of whole nation. Teachers must be efficient in teaching and must have ability to live on with comfort and at the same time interested in the job best owed upon them.

There are five main preliminary matters involved in arriving at a system for the evaluation of teachers. First is the purpose of evaluation; second is the category of teachers to be assessed; third is the conception of teachers; work that is adopted the fourth concerns the dimensions of teaching quality about which judgments are to be made and fifth is the approach to establishing the validity of the assessments. The researcher will study the general teaching competencies among secondary school teachers and will find out if there is any difference between the general teaching competency of male and female teachers, rural and urban teachers and will find out if any increase in the general teaching competency of teachers as the teaching experience increases. The researcher will also study the teaching attitude, teaching interest, teacher’s effectiveness and intelligence and will find out the correlation of general teaching competency with teaching effectiveness, teaching attitude, teaching interest and intelligence. No doubt the study will be beneficial to the teachers.

We all know that teacher is the builder of nation. He is like a gardener who helps different flowers (child with individual differences) to grow in a proper manner so that by their fragrance they make the garden more beautiful and attractive. In the same manner, students are developed by the teacher to their maximum so that they become a useful and dedicated citizen for the development
of nation. Teachers are like the candle who takes individual in the light from the darkness. But in the present scenario we find that there are about 500 educational institutions in Haryana only which develop teachers. As it is common thing about teaching profession that it is for those who do not get any job in other areas. Students by pressure and by getting no other option enter in field of teaching by chance. They do not have a proper attitude towards teaching profession.

The teaching profession is universal regarded not only as one of the most important profession of civilized life, but also the noblest of all. It is therefore, important that those individuals who adopt the teaching profession must have right kind of attitude towards the work. Only teachers with favorable dynamic attitude towards their work can play the real role of nation builders. To make the teaching, goal oriented and to improve the function and environment of any institution; it is essential to measure the attitude of students towards teaching profession with the co-relation of moderation variables. The investigation after reviewing a lot of literature on teaching profession by Datt (1952), Goel (1952), Hale (1954), Virk (1954-55), Buch (1959), Leton (1961), Aggarwal (1968), Bomambalam and Visvesvaricism (1966), Sangwan (1968), Malhotra (1969), Kakkar (1970) and Dosanjh (1970), McKellipsKay (1970), Dogra (1972), Kaur (1983), Bhalwanker (1984), Mohanty (1990), Flores (2001) Dodeen and his colleagues (2004) on teaching profession has related the importance of studying these variables. This study would be desirable to improve the quality and efficiency of teaching to produce efficient teachers. Therefore, the investigator felt to undertake his present investigation on an attitude towards teaching.

The effectiveness of the process of education depends on effectiveness of the teachers. Only effective teacher can implement the government policies. A teacher is a symbol of hope for the whole education system. Education is to be perceived as universal phenomena. It is adequately organized and regulated through formal institution like, schools and colleges. The quality, competency and character of teacher are undoubtedly very significant. Nothing is more important than
to secure or sufficient supply of higher quality personnel to the teaching profession, providing them with the best possible professional preparation and to create satisfactory conditions of work to make their teaching more effective. In colleges of education only effective teachers can further produce effective teachers. So, teacher effectiveness becomes very important question for education and researcher. The NCERT emphasizes upon some points regarding management, infrastructure, salary, workforces in order to improve the effectiveness of teaching.

Aptitude is considered to be an important characteristic of an individual, which can predict the future success or failure of an individual in one occupation or areas of occupations. Aptitude may be described as a specific ability or a specific capacity distinct from the general intellectual ability, which helps an individual to acquire degree of proficiency or achievement in a specific field.

Attitude towards teaching among teachers is of great significance for efficient functioning of colleges of education. No institution can successfully achieve its goal unless and until it has competent faculty. Attitude plays an important role in teacher's effectiveness. Positive attitude is the key factor for success in life. Teacher effectiveness depends upon their attitude. There is a great need to study the effectiveness of teachers in relation to their attitude toward teaching. To make the teacher goal oriented and to improve the function and environment of any institution; it is essential to measures teacher effectiveness correlates with other variables. Thus, in this context effective teacher education attains a crucial role. In fact, it becomes a core condition to ensure high proficiency and quality of school education. Improving teacher performance through most effective teacher preparation is an essential ingredient in solving most educational problems. Educationists all over the world have started realizing that only securing enough teachers will not do? Most important is securing the right type of teachers with right type of knowledge, skills, attitudes and competence.

The effectiveness of education depends upon quality of teachers working in an institution. The quality of teachers in turn depends upon the quality of training
received by them in different training institutions. As we know the quantitative and qualitative improvement of elementary and secondary education has raised problems and solutions of right type of teachers and enriching programmes of teacher preparation. Thus necessitates not only improving the knowledge and teaching competency of a teacher but also to inculcate in them desirable teaching like qualities. We know the teaching profession is one of the most important art of guiding students through a variety of selected teaching methods and methodologies, it should therefore, attract the brightest minds, finest personality and most committed young people. As a profession, it requires people who have right type of aptitude and attitude for teaching to be a successful teacher in future. As a teacher, we should enrich ourselves with different teaching methodologies in order to change the behavior of learners keeping in view their individual differences.

After reviewing the related studies on general teaching competence in correlation with different psycho-demographical variables, the trend of research emerges out that ample number of researches have been conducted by many researchers. But the researcher has found few studies in correlation to the teaching competence, teaching aptitude, intelligence, attitude towards teaching and teacher effectiveness. Therefore, the researcher intends to study the general teaching competencies and components affecting teaching competence of science teachers in colleges of education in Haryana. Primarily, the researcher studied the teaching aptitude, intelligence, attitude towards teaching and teacher effectiveness in correlation to general teaching competency of science teachers. Further, the researcher also find out if there is any difference between the general teaching competence and different components of teaching competence of male and female science teachers. No doubt the study will be beneficial to the teachers.

STATEMENT OF THE PROBLEM

A STUDY OF COMPONENTS AFFECTING TEACHING COMPETENCE OF SCIENCE TEACHERS IN COLLEGES OF EDUCATION IN HARYANA
OPERATIONAL DEFINITION OF THE KEY TERMS USED

Teaching competence

Teaching competence is the ability of a teacher manifested through a set of overt teacher classroom behaviours which is a resultant of the interaction between the presage and the product variable of teaching within social setting (Rama, 1979).

In the present study teaching competence refers to total scores obtained by science teachers teaching in colleges of education on General Teaching Competency Scale (Passi and Lalitha).

Components of Teaching Competence

Teaching Aptitude

Aptitude is a capacity to learn certain skill and abilities which are necessary for success in particular area of work.

In the present study teaching aptitude refers to scores obtained on Teacher’s Teaching Aptitude Questionnaire by Prakash and Srivastva.

Intelligence

According to Wechsler Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.

In the present study intelligence refers to scores obtained on Wechsler Adult Performance Intelligence Scale Indian Adaptation (WAIS) by Ramalingaswamy (1974).

Attitude towards Teaching

In the present study attitude towards teaching refers to scores obtained on Teaching Attitude Inventory by Ahluwalia (1978).

Teacher effectiveness

Flanders & Simon (1969) Teachers effectiveness is an area of research
which is concerned with relationship between the characteristics of teachers teaching acts and their effects on the educational outcomes of classroom teaching. In the present study teacher effectiveness refers to total score obtained on Teacher Effectiveness Scale by Kumar and Mutha (1974).

**Science Teachers**

In the present study science teachers refers to the teachers working in Colleges of Education in Haryana Teaching Physical Sciences and Life Sciences subjects.

**Colleges of Education**

In the present study, Colleges of Education are the Secondary Level Teacher Training Institutions (B.Ed. Colleges) of Haryana.

**OBJECTIVES OF THE STUDY**

The study was carried out with the following objectives:

1. To study the relationship between components of planning teaching competence and teaching aptitude of science teachers in colleges of education.

2. To study the relationship between presentation teaching competence and teaching aptitude of science teachers in colleges of education.

3. To study the relationship between closing teaching competence and teaching aptitude of science teachers in colleges of education.

4. To study the relationship between evaluation teaching competence and teaching aptitude of science teachers in colleges of education.

5. To study the relationship between managerial teaching competence and teaching aptitude of science teachers in colleges of education.

6. To study the relationship between teaching competence and teaching aptitude of science teachers in colleges of education.

7. To study the relationship between planning teaching competence and intelligence of science teachers in colleges of education.
8. To study the relationship between presentation teaching competence and intelligence of science teachers in colleges of education.

9. To study the relationship between closing teaching competence and intelligence of science teachers in colleges of education.

10. To study the relationship between evaluation teaching competence and intelligence of science teachers in colleges of education.

11. To study the relationship between managerial teaching competence and intelligence of science teachers in colleges of education.

12. To study the relationship between teaching competence and intelligence of science teachers in colleges of education.

13. To study the relationship between planning teaching competence and attitude towards teaching of science teachers in colleges of education.

14. To study the relationship between presentation teaching competence and attitude towards teaching of science teachers in colleges of education.

15. To study the relationship between closing teaching competence and attitude towards teaching of science teachers in colleges of education.

16. To study the relationship between evaluation teaching competence and attitude towards teaching of science teachers in colleges of education.

17. To study the relationship between managerial teaching competence and attitude towards teaching of science teachers in colleges of education.

18. To study the relationship between teaching competence and attitude towards teaching of science teachers in colleges of education.

19. To study the relationship between planning teaching competence and teacher effectiveness of science teachers in colleges of education.

20. To study the relationship between presentation teaching competence and teacher effectiveness of science teachers in colleges of education.

21. To study the relationship between closing teaching competence and teacher effectiveness of science teachers in colleges of education.
22. To study the relationship between evaluation teaching competence and teacher effectiveness of science teachers in colleges of education.
23. To study the relationship between managerial teaching competence and teacher effectiveness of science teachers in colleges of education.
24. To study the relationship between teaching competence and teacher effectiveness of science teachers in colleges of education.
25. To study the difference between planning teaching competence of most effective and least effective science teachers in colleges of education.
26. To study the difference between presentation teaching competence of most effective and least effective science teachers in colleges of education.
27. To study the difference closing teaching competence of most effective and least effective science teachers in colleges of education.
28. To study the difference evaluation teaching competence of most effective and least effective science teachers in colleges of education.
29. To study the difference between managerial teaching competence of most effective and least effective science teachers in colleges of education.
30. To study the difference between teaching competence of most effective and least effective science teachers in colleges of education.
31. To study the difference between teaching competence of male and female science teachers in colleges of education.
32. To study the difference between attitude towards teaching of male and female science teachers in colleges of education.
33. To study the difference between intelligence of male and female science teachers in colleges of education.
34. To study the difference between teaching aptitude of male and female science teachers in colleges of education.
35. To study the difference between teacher effectiveness of male and female science teachers in colleges of education.
HYPOTHESIS OF THE STUDY

The study was being carried out with the following hypotheses:

1. There exists significant relationship between planning teaching competence and teaching aptitude of science teachers in colleges of education.

2. There exists significant relationship between presentation teaching competence and teaching aptitude of science teachers in colleges of education.

3. There exists significant relationship between closing teaching competence and teaching aptitude of science teachers in colleges of education.

4. There exists significant relationship between evaluation teaching competence and teaching aptitude of science teachers in colleges of education.

5. There exists significant relationship between managerial teaching competence and teaching aptitude of science teachers in colleges of education.

6. There exists a significant relationship between teaching competence and teaching aptitude of science teachers in colleges of education.

7. There exists significant relationship between planning teaching competence and intelligence of science teachers in colleges of education.

8. There exists significant relationship between presentation teaching competence and intelligence of science teachers in colleges of education.

9. There exists significant relationship between closing teaching competence and intelligence of science teachers in colleges of education.

10. There exists significant relationship between evaluation teaching competence and intelligence of science teachers in colleges of education.

11. There exists significant relationship between managerial teaching competence and intelligence of science teachers in colleges of education.
12. There exists a significant relationship between teaching competence and intelligence of science teachers in colleges of education.

13. There exists significant relationship between planning teaching competence and attitude towards teaching of science teachers in colleges of education.

14. There exists significant relationship between presentation teaching competence and attitude towards teaching of science teachers in colleges of education.

15. There exists significant relationship between closing teaching competence and attitude towards teaching of science teachers in colleges of education.

16. There exists significant relationship between evaluation teaching competence and attitude towards teaching of science teachers in colleges of education.

17. There exists significant relationship between managerial teaching competence and attitude towards teaching of science teachers in colleges of education.

18. There exists a significant relationship between teaching competence and attitude towards teaching of science teachers in colleges of education.

19. There exists significant relationship between planning component of teaching competence and teacher effectiveness of science teachers in colleges of education.

20. There exists significant relationship between presentation component of teaching competence and teacher effectiveness of science teachers in colleges of education.

21. There exists significant relationship between closing component of teaching competence and teacher effectiveness of science teachers in colleges of education.

22. There exists significant relationship between evaluation component of teaching competence and teacher effectiveness of science teachers in colleges of education.
23. There exists significant relationship between managerial component of teaching competence and teacher effectiveness of science teachers in colleges of education.

24. There exists a significant relationship between teaching competence and teacher effectiveness of science teachers in colleges of education.

25. There exists no significant difference between planning teaching competence of most and least effective science teachers in colleges of education.

26. There exists no significant difference between presentation teaching competence of most and least effective science teachers in colleges of education.

27. There exists no significant difference between closing teaching competence of most and least effective science teachers in colleges of education.

28. There exists no significant difference between evaluation teaching competence of most and least effective science teachers in colleges of education.

29. There exists no significant difference between managerial teaching competence of most and least effective science teachers in colleges of education.

30. There exists no significant difference between teaching competence of most and least effective science teachers in colleges of education.

31. There exists no significant difference between mean teaching competence total scores of male and female science teachers in colleges of education.

32. There exists no significant difference between mean attitude towards teaching total scores of male and female science teachers in colleges of education.
33. There exists no significant difference between mean intelligence total scores of male and female science teachers in colleges of education.

34. There exists no significant difference between mean teaching aptitude total scores of male and female science teachers in colleges of education.

35. There exists no significant difference between mean teacher effectiveness total scores of male and female science teachers in colleges of education.

DELIMITATIONS OF THE STUDY

The study has to be investigated within certain well-defined boundaries which were the following:

i. The study was conducted in Haryana state only;

ii. The study was restricted on the science teachers teaching in colleges of education;

iii. The study of variables-teaching competence and components affecting teaching competence viz.

1. attitude towards teaching,

2. intelligence,

3. teaching aptitude, and

4. teacher effectiveness.

MAIN FINDINGS

In the present study, the following main findings have been drawn from the analysis and interpretation of the data. It has been presented in the following headings:

Relationship between teaching competence and teaching aptitude of science teachers in colleges of education

1. It was found that there exists significant relationship between planning teaching competence and teaching aptitude of science teachers in colleges of education. In other words, teaching aptitude was negatively correlated to
planning component of teaching competence. Thus, it can observed that good planning, content selection, content organization has a significant relationship with the teaching aptitude. Science teacher having better teaching aptitude will plan effectively and this will add to his/her competence.

2. It was found that there exists significant relationship between presentation teaching competence and teaching aptitude of science teachers in colleges of education. In other words, teaching aptitude was negatively correlated to presentation component of teaching competence. Thus, it can be seen that good presentation skills as introduction of lesson, fluency of questions, use of probing questions, explaining, illustration, stimulus variation, use of silence and non-verbal cues, increasing pupil has a significant relationship with the teaching aptitude. Science teacher having better teaching aptitude will present the content effectively and will have better competence.

3. It was found that there exists significant relationship between closing teaching competence and teaching aptitude of science teachers in colleges of education. In other words, teaching aptitude was negatively correlated to closing component of teaching competence. It is further revealed from the findings that achieving closure, giving assignment by a Science teacher has significant relationship with teaching aptitude.

4. It was found that there exists significant relationship between evaluation teaching competence and teaching aptitude of science teachers in colleges of education. In other words, teaching aptitude was negatively correlated to evaluation component of teaching competence. Classroom evaluation, diagnosis of pupils difficulties as evaluation skill has significant relationship with teaching aptitude.

5. It was found that there exists significant relationship between managerial teaching competence and teaching aptitude of science teachers in colleges of education. In other words, teaching aptitude was negatively correlated to
managerial component of teaching competence. Recognizing attending behavior and maintaining classroom discipline as a managerial skill among science teachers has a significant relationship with teaching aptitude.

6. It was found that there exists significant relationship between teaching competence and teaching aptitude of science teachers in colleges of education. In other words, teaching aptitude was negatively correlated to teaching competence. After analysis and interpretation of the data it was found that the data supported the assumption and the researcher retained the hypothesis. It may be due to the fact that teaching aptitude proved to be a vital factor which may produce competent teachers. This was supported by Chandrakanta (2000) teaching aptitude was positively correlated to teaching competence. Further, Kohalon and Saini (1989) mental health has low positive correlation with teaching aptitude. Ken and Kleine (1984) reported that competency factor is also correlated significantly with aptitude variables. Thus, it can be concluded that teaching aptitude have found vital factor which may affecting teaching competence of science teachers in colleges of education.

**Relationship between teaching competence and intelligence of science teachers in colleges of education**

1. It was found that there exists significant relationship between planning teaching competence and intelligence of science teachers in colleges of education. In other words, intelligence of science teachers was negatively correlated with planning competent of teaching competence. Science teachers having better intelligence will be able to plan effectively.

2. It was found that there exists significant relationship between presentation teaching competence and intelligence of science teachers in colleges of education. In other words, intelligence of science teachers was positively correlated with presentation competent of teaching competence. Presentation will be effective if it is executed in an intelligent manner.
3. It was found that there exists significant relationship between closing teaching competence and intelligence of science teachers in colleges of education. In other words, intelligence of science teachers was positively correlated with closing competent teaching competence. Intelligence is related to achieving closure and giving assignment as a component of teaching competence.

4. It was found that there exists no significant relationship between evaluation teaching competence and intelligence of science teachers in colleges of education. In other words, intelligence of science teachers was negatively correlated with evaluation component of teaching competence.

5. It was found that there exists significant relationship between managerial teaching competence and intelligence of science teachers in colleges of education. In other words, intelligence of science teachers was positively correlated with managerial competent teaching competence. Attending behavior and maintaining classroom discipline as a managerial skill among science teachers has a significant relationship with intelligence.

6. It was found that there exists significant relationship between teaching competence and intelligence of science teachers in colleges of education. In other words, intelligence of science teachers was positively correlated competent teaching competence. After analysis and interpretation of the data, it was found that the data supported the assumption and the researcher retained the hypothesis. Thus, intelligence was positively related to presenting, closing evaluation, and teaching competence of science teachers in colleges of education. Whereas, intelligence was negatively related to planning and managerial component of teaching competence. The results were supported by Jain (1977) intelligence promoted in teaching and it tended to denote proficiency in teaching only when it was low. Creativity components were positively effective correlates of proficiency in teaching. Mahapatra (1987) the coefficient of correlation between teaching success
and intelligence, was positively significant. It can be concluded that intelligence has found a significant factor which may affects the teaching competence of science teachers except evaluation component of teaching competence.

**Relationship between teaching competence components and attitude towards teaching of science teachers in colleges of education**

1. It was found that there exists a significant relationship between planning teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude of science teachers towards teaching was positively correlated with planning competent teaching competence. Attitude towards teaching of science teachers in colleges of education helps in planning their lessons. A positive and favourable attitude and proper planning makes the work not easier but also more satisfying and professionally rewarding.

2. It was found that there exists significant relationship between presentation teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude of science teachers towards teaching was positively correlated with presentation competent teaching competence. Science teachers in colleges of education present their lesson in a better way if they have positive attitude towards teaching. A teacher’s attitude not only affects his behavior in the classroom but also influence the behavior of students and presentation.

3. It was found that there exists significant relationship between closing teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude of science teachers towards teaching was positively correlated with closing competent teaching competence. Attitude towards teaching determines the closing teaching competence of science teachers in colleges of education.
4. It was found that there exists significant relationship between evaluation teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude of science teachers towards teaching was positively correlated with evaluation competent teaching competence. Science teachers in colleges of education who possess better attitude towards will evaluate effectively and have better teaching efficiency.

5. It was found that there exists no significant relationship between managerial teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude of science teachers towards teaching was positively less correlated with managerial competent teaching competence. A negative unfavourable attitude makes the teaching task harder, more tedious, unpleasant and this will lead to managerial problems.

6. It was found that there exists significant relationship between teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude of science teachers towards teaching was positively correlated to teaching competence. After analysis and interpretation of the data, it was found that the data supported the assumption and the researcher retained the hypothesis. The finding shows that it was found that there exists significant relationship between planning, presentation, closing, evaluation, teaching competence and attitude towards teaching of science teachers in colleges of education. In other words, attitude towards teaching was positively related with the planning, presenting, closing evaluation, managerial components of teaching competence of science teachers in colleges of education. But attitude towards teaching of science teachers was less related in case of managerial teaching competence. The results were supported by study of Bhalwankar (1984) that reveals a positive relation between teachers’ attitude towards
teaching and their teaching competence. Maurya (1990) attitude and teaching efficiency were significantly related.

**Relationship between teaching competence components and teacher effectiveness science teachers in colleges of education**

1. It was found that there exists no significant relationship between planning teaching competence and teacher effectiveness of science teachers in colleges of education. In other words, teacher effectiveness of science teachers was positively less correlated with planning component of teaching competence.

2. It was found that there exists no significant relationship between presentation teaching competence and teacher effectiveness of science teachers in colleges of education. In other words, teacher effectiveness of science teachers was positively less correlated with presentation component of teaching competence.

3. It was found that there exists no significant relationship between closing teaching competence and teacher effectiveness of science teachers in colleges of education. In other words, teacher effectiveness of science teachers was positively less correlated with closing component of teaching competence.

4. It was found that there exists no significant relationship between evaluation teaching competence and teacher effectiveness of science teachers in colleges of education. In other words, teacher effectiveness of science teachers was positively less correlated with evaluation component of teaching competence.

5. It was found that there exists no significant relationship between managerial teaching competence and teacher effectiveness of science teachers in colleges of education. In other words, teacher effectiveness of science teachers was negatively less correlated with managerial competent teaching competence.
6. It was found that there exists no significant relationship between total teaching competence and teacher effectiveness of science teachers in colleges of education. In other words, teacher effectiveness was positive and adversely correlated to teaching competence of science teachers. After analysis and interpretation of the data, the results shows that there exists no significant relationship between planning, presentation, closing, evaluation, managerial components of teaching competence and teacher effectiveness of science teachers in colleges of education. Hence, the researcher rejected the hypothesis as a whole. In other words, teaching effectiveness was positively less related with teaching competence of science teachers in colleges of education. Whereas, teacher effectiveness of science teachers was negatively less related in case of managerial teaching competence. These results were supported by Patel (1976) teaching competencies of trainees, specific five teaching skills were not related to red summative model and vicarious integration. Wangoo (1984) teaching competence and teacher effectiveness were significantly correlated. It can be concluded that teacher effectiveness has not significantly correlated factor which may affects the teaching competence of science teachers.

**Comparison of teaching competence components of most effective and least effective science teachers in colleges of education**

1. It was found that there exists no significant difference in the mean planning component of teaching competence scores of most effective and least effective science teachers in colleges of education. Thus, most effective and least effective science teachers in colleges of education do not differs significantly on their planning component of teaching competence.

2. It was found that there exists no significant difference in the mean presenting component of teaching competence scores of most effective and least effective science teachers of colleges of education. Thus, most effective and least effective science teachers of colleges of education do not
differs significantly on their presenting component of teaching competence.

3. It was found that there exists no significant difference in the mean closing teaching competence scores of most effective and least effective science teachers of colleges of education. Therefore, most effective and least effective science teachers of colleges of education do not differ significantly on their closing component of teaching competence.

4. It was found that there exists no significant difference in the mean evaluation component of teaching competence scores of most effective and least effective science teachers of colleges of education. So, the most effective and least effective science teachers of colleges of education do not differ significantly on their evaluation component of teaching competence.

5. It was found that there exists no significant difference in the mean managerial teaching competence scores of most effective and least effective science teachers of colleges of education. Thus, the most effective and least effective science teachers of colleges of education do not differ significantly on their managerial component of teaching competence.

6. It was found that there exists no significant difference in the mean teaching competence scores of most effective and least effective science teachers of colleges of education. Therefore, most effective and least effective science teachers of colleges of education do not differ significantly on their teaching competence. After analysis and interpretation of the data, the results shown that there exists no significant difference between planning, presentation, closing, evaluation, managerial components of teaching competence of most and least effective science teachers in colleges of education. Hence, the researcher retained the hypothesis as a whole. Thus, most and least effective science teachers were equally competent in the planning, presenting, closing, evaluation, managerial component of teaching competence. These findings were supported by Amandeep and Gurpreet (2005) correlation between teacher effectiveness and teacher
competency was found to be positive and significant. Mutha (1980) it was found that effective teachers have significantly higher scores than ineffective teachers, confirming aptitude as a significant predictor of effective teaching. It can be concluded that most effective and least effective science teachers in colleges of education have exhibited similar competence level in planning, presentation, closing, evaluation and managerial component of teaching.

Comparison of teaching competence components of male and female science teachers in colleges of education

1. It was found that there exists no significant difference in the mean teaching competence scores of male and female science teachers of colleges of education. After analysis and interpretation of the data, the finding shows that there exists no significant difference between teaching competence of male and female science teachers in colleges of education. Hence, the researcher retained the hypothesis. So, male and female science teachers in colleges of education were equally competent in their teaching competence. This result was supported Amandeep and Gurpreet (2005) male and female teachers do not differ significantly in teaching competence. Thamilmani (1990) male and female teachers were similar in their teaching competencies and personality human relations and interpersonal skills. Thus, male and female science teachers of colleges of education do not differs significantly on their teaching competence.

2. It was found that there exists no significant difference in the mean teaching aptitude scores of male and female science teachers of colleges of education. After analysis and interpretation of the data, the finding shows that there exists no significant difference between teaching aptitude of male and female science teachers in colleges of education. Hence, the researcher retained the hypothesis. Thus, male and female science teachers in colleges of education were having equally aptitude towards their teaching. This was
supported Sharma (1984) male and female teachers do not differ significantly their teaching aptitude. Sajan (1999) found that there exists significant difference in teaching aptitude of male and female student teachers. Ranganathan (2008) teaching aptitude and there is no significant different between males and females and the level of self-esteem and teaching aptitude. Male and female science teachers of colleges of education do not differs significantly on their teaching aptitude.

3. It was found that there exists significant difference in the mean intelligence scores of male and female science teachers of colleges of education. After analysis and interpretation of the data, the finding shows that there exists significant difference between intelligence of male and female science teachers in colleges of education. Hence, the researcher rejected the hypothesis. Male science teachers have higher intelligence than female science teachers. This result was supported Singh (1977) the difference in the mean intelligence scores of male and female teachers was not significant. Singh (1991) male and female teachers teaching effectiveness was positively related to intelligence. Male and female science teacher of colleges of education differs significantly on their intelligence.

4. It was found that there exists significant difference in the mean attitudes towards teaching scores of male and female science teachers of colleges of education. After analysis and interpretation of the data, the finding shows that there exists significant difference between attitude towards teaching of male and female science teachers in colleges of education. Hence, the researcher rejected the hypothesis. The attitude of male science teachers towards teaching were shown better than female science teachers. These results were supported by Sarswat (1976) that reported significant differences between the male and the female and the science and arts teachers. The female students were better critics of their teachers than the male. Ramakrishnaih (1980) revealed through his study, that women
teachers have a significant and more favourable attitude towards teaching than men teachers. Another study conducted by Rawat and Sreevastava (1984) revealed significant difference between male and female teacher trainees in their attitude towards teaching profession. Thus, the male and female science teacher of colleges of education differs significantly on their attitudes towards teaching.

6. It was found that there exists no significant difference in the mean teaching effectiveness scores of male and female science teachers of colleges of education. After analysis and interpretation of the data, the finding shows that there exists no significant difference between teaching effectiveness of male and female science teachers in colleges of education. Hence, the researcher retained the hypothesis. The male and female science teachers in colleges of education were having equally effective in their teaching. These results were supported by Singh (1977) who reported that there is no significant difference in mean scores of male and female teachers in their effectiveness. Subarayan (1985) male and female teachers did not differ significantly in respect of teacher effectiveness. Thus, the male and female science teachers in colleges of education do not differs significantly on their teaching effectiveness.

It can be concluded that gender has found significant factors which may influence the intelligence and attitude towards teaching. But it has no effects on teaching competence, teaching aptitude and teaching effectiveness of science teachers.

EDUCATIONAL IMPLICATIONS

The present study is supposed to add to the existing stock of knowledge in the field of education. The aim of education is to humanize the humanity and to make life progressive, cultured and civilized. It is through education that man develops his thinking and reasoning, problem solving and creativity, intelligence and aptitude positive sentiment and skills, good values and attitudes, etc. A teacher holds a key position in the whole of infrastructure of education.
The most outstanding character of any research is that it must contribute something new to the development of the area concerned. The contents of the study are of much importance and vital concern to educators. The present study has established that to increase the student achievement the general teaching competency of teachers is one of the most important factor. It was also found that be higher which will be possible only if the teacher is competent and has favorable attitude towards teaching profession. So, the investigator has drawn the following educational implications of his study. The present study has its implications for both the teachers, students and policy makers. A number of significant implications emanate from the foregoing findings. They may be listed as follows:

1. It has found that teaching aptitude is positively moderate correlation with teaching competence of science teachers in colleges of Education. Therefore there is a need to raise the level of teaching competency of science teachers. To improve the teaching competency of teachers following steps need to be taken:
   i. Teacher with better qualification in science subjects should be appointed.
   ii. Faculty development programme should be made more affective. Therefore, it should be compulsory for them.
   iii. Regular in-service training should be organized for teachers. Training during vacations or regular seminars should be organized regularly to make the teacher conversant with the latest methods of subject teaching and solve their subject problems also.

2. In the present study it was found that the teaching competency and attitude of teachers towards teaching profession are associated with each other. Generally it is expected that the teaching competency of teachers will be higher or lower according to their favourableness or unfavourableness of attitude towards teaching.

3. On the other hand, the teaching competency is related to intelligence which can be observe or measured by the behavior of teacher in the class-room. It
calls for hard works and preparation for teaching that is why there is almost negligible relationship between these two variables.

4. In the present study it was found that teacher effectiveness was not significantly related with the planning, presenting, closing, and evaluation, managerial and teaching competence of science teachers in colleges of education. In other words, the teaching competency and teacher effectiveness are not associated with each other. It is neither an expected nor a desirable finding. Generally it is expected that the teaching competency of teachers will be higher or lower according to their effective or ineffective of teaching. The present finding thus may be due to small sample of teachers taken for the study or there are different factors which affect the attitude and competency of science teachers in colleges of Education. The present finding thus may be due to small sample of teachers taken for the study or there are different factors which affect the teacher effectiveness and competency of science teachers in colleges of Education in Haryana.

Among other programmes to shape out quality teachers and their teaching procedures, the first and foremost need is to identify factors that enhance teaching effectiveness by administrating teacher effectiveness scale. If definite predictors of teaching effectiveness are known precisely. It may be possible to help school administrators in their work. The study of teacher effectiveness give valuable information for recruiting teachers for employment, administration and management of schools and arranging and organizing programmers for professional growth of teachers.

The study has its implication for the organizers of educational institutions, administrations and planners of educational policies. Role of effective science teachers explicitly expressed the role of effective teachers and their teaching strategies for proper growth of future generations. There is a pressing need that the work of the teachers should be objectively assessed. Basically, some adequate criteria must be specified.
SUGGESTIONS FOR FURTHER RESEARCHES

Based on the findings and conclusions of the study and taking into considerations its delimitations, the following suggestions are made for further research in this area. In view of the gains and limitations that the study points out, a few topics may this stage be for further investigation:

1. The present finding thus may be due to small sample of teachers taken for the study or there are different factors which affect the competency and attitude of science teachers in secondary level teacher training institutions. Therefore, it needs further research on a large sample of science teachers and to investigate the reasons as to why the teachers in the sample have highly favourable attitude towards teaching profession but their teaching competency is not that much higher.

2. Studies may be conducted to study the behaviour patterns of science teachers in relation to gender, socio-economic status and other demographic variables.

3. Further studies also needed on general teaching competencies of primary, secondary and higher secondary trained and untrained teachers.

4. To study the general teaching competency, teaching attitude and teaching interest by pre-service teacher training trainees having different achievement in the qualifying examination.

5. The present study is delimited to science teachers working in self-financing secondary level teacher training institutions of Haryana state only. It will be worthwhile to replicate it on a larger sample consisting Government and Private Institute.

6. Further studies may be conducted on school environment, student self-concept, teacher job satisfaction, and their effects on student learning outcomes.

7. Studies may be undertaken by taking into consideration other variables like socio-economic status, emotional intelligence, locus of control, job-
satisfaction, teacher commitment, organizational health and other variables.

The present investigation which is perhaps the first and the only available comprehensive study regarding the science teachers in colleges of education pertaining to study of variables viz. teaching competence, teaching aptitude, intelligence, attitudes towards teaching and teacher effectiveness, which will stimulates thinking and generate interest among the researchers. It is hoped that the researchers in future shall be encouraged to undertake further follow up work in these areas to improve the teacher training programmes.