SUMMARY, CONCLUSIONS AND DISCUSSION

Summary

Education is intricately interwoven with human life, enriching the individual with a variety of experiences, kindling the flames of knowledge through constant probing into the mysteries of life. Education plays an important role in the economic and social development of the country, in the building of a truly democratic country, in the development of a truly democratic society, in the development of a truly democratic citizen, in the promotion of national integration and unity and above all in the transformation of the individual for endless pursuit of excellence and perfection. Thus, education plays an important role in shaping of the nature.

Teaching is an important part of the process of education. There are three focal points in education – the teacher, the child and the subject matter. Teaching brings teacher, student and subject matter into a relationship. It is the process by which the teacher brings the student and the subject matter together. It is a series of events through which a teacher attempts to bring desired behavioural changes in students.

The teacher is the single most important key factor in the success of an educational programme, reform or advancement. Saiyidain observes, ‘the more I see of educational work – good work and bad work – the more emphatically I feel that the quality of the teachers in an educational system
is a more important factor than all the other educational factors put together – syllabus, text books, equipment and buildings.’ The impact of any educational programme or innovation on the student operates through the teacher. It is, therefore, quite pertinent to say that a school’s effectiveness depends directly on the effectiveness of its teachers. So, maximising teaching effectiveness of teachers is a major goal of education.

There is a saying that ‘an ordinary teacher tells, a good teacher demonstrates, the best teacher inspires.’ The teachers who inspire and motivate the students are included in the category of ‘effective teachers’. According to Kothari Commission, ‘the destiny of a nation is being shaped in the class rooms.’ So, the teacher has the responsibility to shape the destiny. The effective teacher is the educational leader and decision-maker who directly affects and indirectly influences the students. So, improving the teaching effectiveness of prospective teachers should be the main aim of any teacher education programme.

Teaching needs three qualities: knowledge is the first, communication skills are the second, aptitude is the third (The Hindu, 2002, September 3). Teaching aptitude is a person’s potential for teaching, which is the sum total of all the traits and abilities which are needed for successful teaching. A person who has a good proportion of the traits and abilities required for becoming an effective teacher like high level of thinking skills, adequate base in subject matter, interest in teaching, skill in experimentation, skill in problem solving, willingness to improve professionally, love for children, thirst for knowledge, interest in reading may be said to possess an aptitude for teaching. Teaching aptitude is the capacity to acquire proficiency with a given amount of training in teacher
education. It refers to the capacity of an individual to be skilled in teaching, receiving formal or informal training. It also refers to a teacher’s character, optimistic attitude, fair-mindedness, impartial behaviour, good manners, cooperativeness, wide interest, scholarly taste, dynamic personality, etc. Thus, the teaching aptitude helps the prospective teachers to teach effectively with great vigour and glamour. Therefore, in the interest of a meaningful and developing educational system for the country, it is absolutely essential that the selection of the teachers should be made on the basis of their teaching aptitude. If the desirable characteristics are to be developed in prospective teachers, they need to have aptitude for these characteristics. In the absence of the aptitude, these characteristics may not be developed to the required levels. So, teaching aptitude of student teachers is an essential requisite for effective teaching.

The positive attitude of a teacher towards teaching influences him to become a competent teacher. A competent teacher strives for the quality of education. The quality of education contributes to the national development. A teacher who has a positive attitude towards teaching can show interest in teaching and acquire the skills which are essential for effective teaching. The Indian Education Commission 1964-66, felt that it was necessary to attract men and women of ability to the profession and to retain them in it as dedicated, enthusiastic and contended workers.

A favourable attitude of the teachers towards teaching is an extremely important aspect which has to be taken into consideration in trying to improve the quality of teaching. The teachers who have negative attitude towards teaching are more distressed about their teaching situation than the teachers who have positive attitude towards teaching. Keeping
other things apart, one who likes teaching can do better than the one who
does not like it. Thus, for the professional growth of teachers and
improvements in education, the attitude of the teachers is very important.
How a teacher performs his duty as a teacher is dependent, to a great
extent, on his or her attitude. A positive favourable attitude towards
teaching makes the teaching not only easier, but also more satisfying and
professionally rewarding. A negative and unfavourable attitude towards
teaching makes the teaching difficult and unpleasant. The effective learning
on the part of the students can be achieved only by teachers who are with
positive and favourable attitudes. Thus, the teacher’s attitude towards
teaching plays an important role in teaching learning process.

The attitude of a teacher could influence his actions in the
classroom, which becomes critical to student learning. The teacher’s
attitude regarding mathematics and students is relative to attitudes towards
the teaching of mathematics, which in turn, has a powerful impact on the
atmosphere within the mathematics classroom. The teachers’ attitude
towards the teaching of mathematics plays a significant role in shaping the
attitude of students towards the learning of mathematics. Enthusiasm,
resourcefulness and thorough knowledge of the subject matter make
prospective teachers improve their attitude towards the teaching. It is a fact
that many of the prospective mathematics teachers do not have a positive
attitude towards teaching mathematics. So, immediate steps should be
taken to correct the situation. However, it is unfortunate to hear that studies
on the attitude of prospective teachers towards teaching are not many;
studies on the attitude of the prospective mathematics teachers towards
teaching mathematics are rarer to find.
Hence, there is a felt need to study the teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of prospective mathematics teachers. There are only a handful of studies to discern the relationship of locality, gender, educational qualification, academic achievement and community and their impact on the level of teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of the prospective mathematics teachers. This has prompted the researcher to undertake the present study.

This study is designed to know the general level of teaching effectiveness, teaching aptitude and attitude towards teaching mathematics prevailing among the prospective mathematics teachers and to find out the influence of certain selected variables on these three aspects. It is confined to the prospective mathematics teachers of B.Ed. colleges affiliated to Acharya Nagarjuna University.

The variables, namely 1) Locality : urban prospective mathematics teachers versus rural prospective mathematics teachers, 2) Gender : men prospective mathematics teachers versus women prospective mathematics teachers, 3) Educational Qualification : graduate prospective mathematics teachers versus post-graduate prospective mathematics teachers, 4) Academic achievement : low achievement versus average achievement versus high achievement prospective mathematics teachers, and 5) Community : Open Category (O.C.) versus Backward Class (B.C.) versus Schedule Caste (S.C.) prospective mathematics teachers were selected for studying the teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of prospective mathematics teachers.
The following objectives were proposed for the present study: 1. To study the teaching effectiveness of prospective mathematics teachers. 2. To find out the influence of the variables, viz., locality, gender, educational qualification, academic achievement and community on teaching effectiveness of prospective mathematics teachers. 3. To study the teaching aptitude of prospective mathematics teachers. 4. To find out the influence of the selected variables, viz., gender, locality, educational qualification, academic achievement and community on teaching aptitude of prospective mathematics teachers. 5. To study the attitude towards teaching mathematics of prospective mathematics teachers. 6. To find out the influence of the variables, viz., gender, locality, educational qualification, academic achievement and community on the attitude towards teaching mathematics of prospective mathematics teachers. 7. To find out the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of prospective mathematics teachers. 8. To find out the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of rural and urban; men and women; graduate and post-graduate; low, average and high achievement group; and O.C., B.C. and S.C. prospective mathematics teachers.


The hypotheses were formulated in null form, taking the objectives into consideration. The hypotheses were: Hypothesis 1: Prospective mathematics teachers do not possess high teaching effectiveness. Hypothesis 1a: There is no significant difference in the teaching effectiveness of rural and urban prospective mathematics teachers. Hypothesis 1b: There is no significant difference in the teaching effectiveness of men and women prospective mathematics teachers. Hypothesis 1c: There is no significant difference in the teaching effectiveness of graduate and post-graduate prospective mathematics teachers. Hypothesis 1d: There is no significant difference in the teaching
effectiveness of low, average and high academic achievement group prospective mathematics teachers. *Hypothesis 1e*: There is no significant difference in the teaching effectiveness of O.C., B.C., and S.C. prospective mathematics teachers. *Hypothesis 2*: Prospective mathematics teachers do not possess high teaching aptitude. *Hypothesis 2a*: There is no significant difference in the teaching aptitude of rural and urban prospective mathematics teachers. *Hypothesis 2b*: There is no significant difference in the teaching aptitude of men and women prospective mathematics teachers. *Hypothesis 2c*: There is no significant difference in the teaching aptitude of graduate and post-graduate prospective mathematics teachers. *Hypothesis 2d*: There is no significant difference in the teaching aptitude of low, average and high academic achievement group prospective mathematics teachers. *Hypothesis 2e*: There is no significant difference in the teaching aptitude of O.C., B.C., and S.C. prospective mathematics teachers. *Hypothesis 3*: Prospective mathematics teachers do not possess high attitude towards teaching mathematics. *Hypothesis 3a*: There is no significant difference in the attitude towards teaching mathematics of rural and urban prospective mathematics teachers. *Hypothesis 3b*: There is no significant difference in the attitude towards teaching mathematics of men and women prospective mathematics teachers. *Hypothesis 3c*: There is no significant difference in the attitude towards teaching mathematics of graduate and post-graduate prospective mathematics teachers. *Hypothesis 3d*: There is no significant difference in the attitude towards teaching mathematics of low, average and high academic achievement group prospective mathematics teachers. *Hypothesis 3e*: There is no significant difference in the attitude towards teaching mathematics of O.C., B.C., and
S.C. prospective mathematics teachers. *Hypothesis 4*: There is no significant association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of the prospective mathematics teachers. *Hypothesis 4a*: There is no significant difference in the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of rural and urban prospective mathematics teachers. *Hypothesis 4b*: There is no significant difference in the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of men and women prospective mathematics teachers. *Hypothesis 4c*: There is no significant difference in the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of graduate and post-graduate prospective mathematics teachers. *Hypothesis 4d*: There is no significant difference in the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of low, average and high academic achievement group prospective mathematics teachers. *Hypothesis 4e*: There is no significant difference in the association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of O.C., B.C., and S.C. prospective mathematics teachers.

The normative survey method was used in order to study teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of prospective mathematics teachers. The population of the study comprised prospective mathematics teachers pursuing teacher training programme i.e., B.Ed. course, in Colleges of Education affiliated to Acharya Nagarjuna University in Andhra Pradesh.
A sample of 500 prospective mathematics teachers was selected from the population by using stratified random sampling technique as it is the most appropriate technique for the present study. Out of the total sample, when divided variable wise, the size of the sample consisted of urban prospective mathematics teachers - 250; rural prospective mathematics teachers - 250; men prospective mathematics teachers - 250; women prospective mathematics teachers - 250; graduate prospective mathematics teachers - 350; post-graduate prospective mathematics teachers - 150; prospective mathematics teachers of different academic achievement groups: high - 150, average - 256 and low - 94 and prospective mathematics teachers of different communities: open category (O.C.) - 145, backward caste (B.C.) - 240 and schedule caste (S.C.) - 115 were considered for the present study.

The research tools occupy a major role in any research study as they are useful in the collection and analysis of data to draw meaningful and valid conclusions. In the present study, ‘Teaching Aptitude Test Battery’ (TATB) of Shamim Karim and Ashok Kumar Dixit was used to study the teaching aptitude of prospective mathematics teachers. The researcher prepared a tool, viz., ‘Attitude towards Teaching Mathematics scale’ by following the usual procedure of test standardisation to measure the attitude towards teaching mathematics of prospective mathematics teachers. The researcher also prepared and validated a tool, viz., ‘Teaching Effectiveness Scale’ to measure the teaching effectiveness of prospective mathematics teachers.

For obtaining teaching effectiveness of the sample of prospective mathematics teachers selected for the study, the mathematics teacher
educators of the sample Colleges of Education were requested to act as raters. Thus, the data about the teaching effectiveness of the total sample of prospective mathematics teachers was collected through mathematics teacher educators. The prospective mathematics teachers, who were rated by their mathematics teacher educator, were given the booklet of research tools meant for them, viz. personal data sheet, teaching aptitude test and attitude towards teaching mathematics scale and requested them to respond to all parts of the booklet of research tools and to all statements without leaving any part or any statement. For the data collection, the researcher took the help of mathematics teacher educators concerned and administered the tools after taking the prior permission from the principal of the college.

Arithmetic mean was used to estimate the general level of each variable possessed by the sample. To study the influence of independent variables on the dependent variables, inferential statistics such as ‘t’ test and ‘F’ test were employed appropriately. Chi-Square test was used to test the nature of the distribution and also to test the association among the variables. The above mentioned statistical techniques were used for the analysis of the data and to extract the findings. Based on the findings, suitable conclusions were drawn for necessary discussion and implementation.
CONCLUSIONS AND DISCUSSION

The following are the conclusions drawn from the analysis of data, which are followed by discussion and suggestions.

1. **The teaching effectiveness was found average in prospective mathematics teachers.**

   Mutha (1980), and Vibhalakshmi and Chandel (2008) also found moderate teaching effectiveness in prospective teachers.

   Good and effective teaching system is a mechanism that could work to synchronise the three most important pillars of a vibrant educational system, i.e. course, instructor and student. These are to be regularly and effectively monitored for achieving a productive and fruitful teaching and learning process. Thus, prospective mathematics teachers should make use of proper instructional materials like charts, real objects, models, etc., to facilitate the understanding of the students and use suitable teaching methods like inductive and deductive methods, analytic and synthetic methods, heuristic method, laboratory method, etc., for effective transaction of course contents. Active participation of students should be encouraged to make teaching more effective. If the effectiveness in teaching is more, the classroom teaching will be more fruitful.

2. **The rural and urban prospective mathematics teachers had average teaching effectiveness without any significant difference between them.**

Paul Kumarvel (2003) found that rural teachers are more effective in teaching than urban teachers.

Majority of the families reside in rural areas, but the students move to urban localities for their education. This may be the probable reason for this result. At the same time, we are in the information technology era and now information is accessible to everybody, everywhere at any time. The Teacher educators have to realise the fact that the residential background of the student teachers is not going to have any impact on the development of their teaching effectiveness. So, special focus should be made by the teacher educators to raise the general level of teaching efficiency of student teachers by understanding the needs, aspirations and requirements of urban and rural prospective mathematics teachers.

3. The men and women prospective mathematics teachers had an average teaching effectiveness with a significant difference. Women prospective mathematics teachers had better teaching effectiveness than men prospective mathematics teachers.

The results confirmed the findings of Pachuri (1983), Gupta (1985), Virgil (1989), and Tower and Davis (2002).

Chandrasekhar Reddy (1980) and Patel & Das (1984) found more teaching effectiveness in male prospective teachers than female prospective teachers contradictory to the findings of the present study.

Augustine (2010), Norzaini Azman (2012) and Sodhi Binakshi (2012) found no significant gender difference in the teaching effectiveness.

The finding of the study may be the outcome of the belief that teaching profession is feminine. Most of the women teachers prefer teaching profession as a better career. The prospective mathematics teachers irrespective of their gender should try to develop better teaching effectiveness.

4. The graduate prospective mathematics teachers and post-graduate prospective mathematics teachers had average teaching effectiveness with a significant difference. The Post-graduate prospective mathematics teachers had better teaching effectiveness than the graduate prospective mathematics teachers.

Gupta (1958), Hall (1964), Rao, et al. (1990), and Kagalatha (2002) reported that teaching effectiveness increased with higher academic qualifications which coincides with the present study.

In general, the post-graduates would have relatively good command over the subject matter, more grasping power and high degree of intellectual abilities as they possess better qualification. This might have been paved the way for more teaching effectiveness among the post-graduate prospective mathematics teachers when compared to their graduate counterparts.

So, the graduate prospective mathematics teachers should improve their professional qualification; cultivate intellectual capabilities, and experiment new methods of teaching to increase the level of their teaching effectiveness on par with their post-graduate counterparts.
5. Low, average and high academic achievement group prospective mathematics teachers possessed average teaching effectiveness without any significant difference among them.

Vashishta (1973) found the academic grades to be the best predictors of teaching effectiveness. But, the result of this study is contradictory to the above finding.

Debnath (1971) reported that the academic achievement is the significant determinant of teaching effectiveness.

Cornelius (2000) found that factors like the academic achievement of teacher trainees are effective discriminating factors of different groups of subjects.

Achievement is the ability to know how much knowledge one has imbibed from the subject that one has learned. In general, all the prospective mathematics teachers might possess the required subject knowledge which is essential for teaching mathematics at secondary school level irrespective of their academic achievement.

6. The O.C., B.C. and S.C. prospective mathematics teachers had average teaching effectiveness without any significant difference among them.

Murugaiah (1995) found no significant difference in the teaching effectiveness of forward, backward and scheduled caste communities. The result of the present study confirmed the above finding.

One should be sympathetic towards people belonging to different communities and encourage them in their studies. Teachers need to ensure a genuine learning habit in students. This should help the learner to think
critically and practically. The need of the hour is to take necessary steps for promoting the teaching effectiveness of prospective mathematics teachers of different communities by providing the required support. This will, in turn, help the students of different communalities of the society to excel in their examinations.

7. The prospective mathematics teachers had very high teaching aptitude.

Bhoom Reddy (1991), Mallikarjuna Reddy (2010), Satyanarayan (2012) found very high teaching aptitude among teachers. The result of the present study confirmed the above findings.

Divyanshi Chung (2012) found average teaching aptitude among prospective teachers.

The prospective mathematics teachers had very high teaching aptitude. This should be maintained to continue themselves as the most efficient mathematics teachers throughout their teaching career. Experience always helps the teachers to enhance their psychological traits that have a positive impact on teaching and so is the case with teaching aptitude. All the prospective teachers with very high teaching aptitude should help their students to make good progress and excel in their mathematics subject.

8. There was a significant difference in the teaching aptitude of rural and urban prospective mathematics teachers though both of them hold very high teaching aptitude. The rural prospective mathematics teachers had high teaching aptitude when compared with urban prospective mathematics teachers.
Bhasin (1988), Periasamy (2001) and Reddy (2001) did not find any significant difference in the level of teaching aptitude possessed by urban and rural teachers, which is contradictory to the finding of the present study.

As both rural and urban prospective mathematics teachers had high teaching aptitude, this fruitful progress should help them to inculcate enthusiasm in their students in order to do their best in all academic and curricular activities.

9. There was a significant difference in the teaching aptitude of men and women prospective mathematics teachers though both of them hold very high teaching aptitude. The women prospective mathematics teachers had better teaching aptitude when compared with men prospective mathematics teachers.

Nair (1974), Upadhyaya (1976), Sharma (1984), Reddy (2001), Ranganathan (2008), and Augustine (2010) found no significant difference in the teaching aptitude of men and women teachers, whereas Sajan (1999), Arun and Geetha (2006), and Kuraishy and Ahmad (2010) found a significant difference between men and women teachers with regard to teaching aptitude, which supports the present study.

Adaval (1952), Thakkur (1977), Bhoom Reddy (1991), Chung (2012) found that female prospective teachers had high teaching aptitude.

The possible reason for the above finding may be the belief that teaching is considered to be a female activity because of the reasons like perseverance, diligence, patience, attachment towards children and the liking towards teaching profession. Both men and women prospective
mathematics teachers with their high teaching aptitude should help their students in doing well in mathematics.

10. **There was a significant difference in the teaching aptitude of graduate and post-graduate prospective mathematics teachers though both of them hold very high teaching aptitude. The graduate prospective mathematics teachers possessed much more teaching aptitude than the post-graduate prospective mathematics teachers.**

Sharma (1971), Skipper and Charles (1993), and Kuraishy and Ahmad (2010) found that the post-graduate teachers had high teaching aptitude, which is contradictory to the finding of the present study. This is an unexpected result and there is a need to explore the reasons for this. We have to build a strong society to enter into the list of developed counties by increasing the teaching aptitude in prospective mathematics teachers irrespective of their academic qualifications, who in turn help their students in the schools.

11. **There was no significant difference in the teaching aptitude of high, average and low academic achievement group prospective mathematics teachers and all of them had very high teaching aptitude.**

More (1988), Diwan and Dinesh Kumar (1991), and Kuraishy and Ahmad (2010) found that the academic achievement of student teachers was positively related to teaching aptitude, which is contradictory to the present finding.
Many an academician thinks that several psychological aspects are closely linked to the academic achievement. Surprisingly, the teaching aptitude of prospective mathematics teachers is not influenced by their academic achievement. The prospective mathematics teachers, ignoring their past academic achievement, need to do well in their profession in future.

12. **The O.C., B.C. and S.C. prospective mathematics teachers hold very high teaching aptitude without a significant difference.**

   It is a good sign that most of the O.C., B.C. and S.C. prospective mathematics teachers possessed very high teaching aptitude as teaching aptitude is a prerequisite for effective and successful teaching. This should be maintained by all of them and do their best to their student clientele.

13. **The prospective mathematics teachers had moderate attitude towards teaching mathematics.**

   Ganapathi (1992) found that the student teachers had a favourable attitude towards the teaching of mathematics, which supports the finding of the present study.

   But Eaton and Kidd (1988), Stephens (1993), Arp (1999), and Grootenboer (2002) found that the pre-service teachers had negative attitude towards the teaching of mathematics.

   Effective and productive learning on the part of pupils can be achieved only when teachers possess desirable attitudes. A favourable attitude of teachers towards teaching is an extremely important aspect which has to be taken care of while trying to improve the system of education and more specifically the quality of teaching-learning process. It
is one of the important parameters in predicting the teaching effectiveness of student teachers.

The studies reviewed on attitude towards teaching reveal that attitude can be improved through practical experience. So, in order to improve the teaching effectiveness of prospective mathematics teachers, the teacher education course must focus on the development of favourable attitude towards teaching by providing more practical experiences.

14. There was no significant difference in the attitude towards teaching mathematics of rural and urban prospective mathematics teachers and both of them had moderate attitude towards teaching mathematics.

Belagali (2011) found that the urban secondary school teachers had higher attitude towards teaching profession when compared with their rural counterparts, which is contradictory to the finding of the present study.

Usually, the attitude of rural and urban prospective mathematics teachers towards teaching will have a significant difference. If both of them are exposed to the same type of curriculum, teaching methods, good infrastructural facilities and to various teaching skills that are involved in teaching mathematics, then it will set a good platform for the development of a favourable attitude towards teaching mathematics.

15. There was a significant difference in the attitude towards teaching mathematics of men and women prospective mathematics teachers and men prospective mathematics teachers had more attitude towards teaching mathematics than their women counterparts though both of them possessed moderate attitude towards teaching mathematics.
Bosewell (1985), Gupta (1984), Srivastava (1984), Goddarspear (1989), and Kumar (1995) found that boys were more likely to report liking towards teaching mathematics than girls.

Ramakrishnaiah (1980), Poozhikuth (1989), Pushpam (2003), and Akkaya (2009) found that girls had more favorable attitude towards teaching than boys.

Balan (1996) found that boys and girls did not differ significantly in their attitude towards teaching.

Attitude towards teaching, irrespective of gender of teachers plays a major role in the acquisition of teaching competence. The maxims of teaching also indicate that one who accepts the profession as passion will become an effective and efficient teacher. Hence, both men and women prospective mathematics teachers need to develop required attitude towards teaching mathematics and inculcate interest in students in learning mathematics.

16. There was no significant difference in the attitude towards teaching mathematics of graduate and post-graduate prospective mathematics teachers and both the groups of prospective mathematics teachers possessed moderate attitude towards teaching mathematics.

The finding of the present study coincides with that of Nirmala Devi (2005).

The present study is contradictory to the findings of the following studies.
NCERT (1971) in a study found that the teachers with lower educational qualifications had more positive attitude than those with higher qualifications.

Sumangala and Ushadevi (2009) found that post-graduate teachers showed more favourable attitude towards teaching than graduate teachers.

There is a need to explore the reasons for this state of affairs and to improve the present conditions, because though the post-graduates studied mathematics for five years, they possess relatively lower attitude towards teaching mathematics than their graduate counterparts who had studied mathematics for three years after higher secondary education.

It is, in this unconvincing scenario, the responsibility of the mathematics teacher educators is to develop more favourable attitude towards teaching mathematics among the prospective mathematics teachers.

17. There was no significant difference in the attitude towards teaching mathematics of low, average and high academic achievement group prospective mathematics teachers and all the three groups of prospective mathematics teachers had moderate attitude towards teaching mathematics.

Though majority of the prospective mathematics teachers belonging to the above mentioned three categories are doing well academically at various levels, they possessed moderate attitude towards teaching mathematics without a significant difference. There is a need to examine the relevance of the present position of the academic achievement of
prospective mathematics teachers in teacher training educational institutions in the context of their attitude towards mathematics teaching.

It is happy to know that the prospective mathematics teachers had favourable attitude towards teaching mathematics and majority of them held moderate attitude towards teaching mathematics. To build a positive attitude and develop their teaching career, they should be provided with proper guidance and counselling.

18. There was no significant difference in the attitude towards teaching mathematics of O.C., B.C. and S.C. prospective mathematics teachers and all the three groups of prospective mathematics teachers possessed moderate attitude towards teaching mathematics.

It is a good sign that the community of the prospective mathematics teachers had no effect on their attitude towards teaching mathematics. If the teacher educators forget about the community differences among their student teachers and think that they are the teachers to build the progressive society, then they can prepare the student teachers with a favourable attitude towards teaching. This is a dire need of the day.

19. There was a significant association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of prospective mathematics teachers.

Student teachers are mostly inspired by their teacher educators. So, the mathematics teacher educators should make an attempt to identify teaching skills in the context of instructional objectives related to cognitive, affective and psychomotor domains and execute them in teaching. This will help them to give a new direction in developing teaching effectiveness,
teaching aptitude and favourable attitude towards teaching mathematics among the prospective mathematics teachers studying in Colleges of Education.

20. There was a significant association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of rural and urban prospective mathematics teachers.

The quality, commitment, concern, devotion and competence of a teacher mostly depend on the teacher education colleges where they are moulded during the pre-service teacher education course irrespective of the residential location of the teacher as well as the institution. In this study, the prospective mathematics teachers hailing from rural background showed more favourable attitude towards teaching mathematics than urban habitations. There is a need to improve the attitude towards teaching mathematics, which should be enriched by motivating the prospective mathematics teachers to develop more favourable attitude towards teaching mathematics. It would go a long way in updating the knowledge of the prospective mathematics teachers and prepare them to face the future challenges in mathematics teaching with confidence and courage.

21. There was a significant association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of men and women prospective mathematics teachers.

The prospective mathematics teachers irrespective of their gender should develop teaching effectiveness, teaching aptitude and attitude towards teaching mathematics that help them to become effective mathematics teachers.
22. There was a significant association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of graduate prospective mathematics teachers but there was no significant association among teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of post-graduate prospective mathematics teachers.

This result may be due to the heterogeneous nature of the graduates and post-graduates studying in Colleges of Education. So, the prospective mathematics teachers with proper teaching and learning environment should imbibe desirable attitudes, develop essential teaching aptitude and enhance teaching effectiveness irrespective of their educational qualification. They also need to improve their academic qualifications for professional growth and effective teaching.

23. There was a significant association between teaching effectiveness and teaching aptitude and attitude towards teaching mathematics and teaching effectiveness of low, average and high achievement group prospective mathematics teachers and there was no significant association between teaching aptitude and attitude towards teaching mathematics in low and average achievement group prospective mathematics teachers. There was a significant association between teaching aptitude and attitude towards teaching mathematics in high achievement group prospective mathematics teachers.

This result may be due to the diverse nature of the academic achievement of prospective mathematics teachers. The prospective mathematics teachers must develop positive attitude towards teaching
mathematics and aspire for good academic achievement in mathematics subject. In the context of liberalisation, privatisation and globalisation (LPG) policies, the production of effective mathematics teachers with required subject knowledge is the need of the hour. Thus, academic achievement is an important criterion for selection, promotion or recognition in various walks of life that cannot be ignored.

24. There was no significant association between teaching effectiveness with teaching aptitude of O.C. prospective mathematics teachers, teaching aptitude and attitude towards teaching mathematics of B.C. and S.C. prospective mathematics teachers and attitude towards teaching mathematics and teaching effectiveness of S.C. prospective mathematics teachers. But there was a significant association between teaching effectiveness and teaching aptitude of B.C. prospective mathematics teachers; teaching aptitude and attitude towards teaching mathematics of S.C. prospective mathematics teachers and attitude towards teaching mathematics and teaching effectiveness of O.C. and B.C. prospective mathematics teachers.

The teaching effectiveness, teaching aptitude and attitude towards teaching mathematics of prospective mathematics teachers related to community should be enriched by motivating the prospective mathematics teachers to become exemplary mathematics teachers. There is a need for the teacher educators to inculcate teaching effectiveness, teaching aptitude and attitude towards teaching mathematics in their student teachers.
SUGGESTIONS FOR FURTHER RESEARCH

In the light of the present study, the following studies may be taken up by those who aspire to do research.

1. A study on prospective teachers of other subjects, viz., Biological Science, Social Studies, English, etc., can be conducted.

2. A study on prospective teachers of various levels, viz., primary, upper primary and higher secondary levels can be conducted.

3. Similar studies may be taken up on in-service teachers.

4. There are many more correlates of teaching effectiveness, teaching aptitude and attitude towards teaching of mathematics other than the variables that are considered in the present study. Studies including other such variables may be undertaken by the future researchers.

5. Teaching effectiveness could be measured in different methods like observation, pupil achievement, self rating, peer ratings etc. In the present study, teaching effectiveness was measured from the ratings provided by mathematics teacher educators. Therefore, teaching effectiveness may be measured by other methods, which were not used in this study and the results may be confirmed.

6. Studies may be taken up to compare the teaching effectiveness, teaching aptitude, and attitude towards teaching of teachers working in primary schools and secondary schools in order to fill the gap between these two levels.

7. Studies may be taken up to identify the influence of intelligence, interest in teaching, personality, mathematical aptitude, etc., on the level of teaching effectiveness, teaching aptitude, and attitude towards teaching of mathematics.
8. Studies may be taken up to find out the impact of various personal and demographic variables that were not included in the present study on teaching effectiveness, teaching aptitude, and attitude towards teaching.

9. Studies may be taken up to identify the influence of psychological factors on teaching effectiveness, teaching aptitude, and attitude towards teaching.

10. Only a few independent variables were included in the present study. There are still some variables such as economic status of the parents, marital status, age, vocational interests, adjustment, etc. Many such variables may be considered for further research studies.