CHAPTER- V

SUMMARY, FINDINGS, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS
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5.1 Background of the Study

Liberalization, globalization and privatization have brought in their wake intense competition. Education plays an important role in enabling a person to face real life situation with adequate knowledge and skills. All-round betterment will enable the students to be prepared and equipped in this fast paced life to undertake work efficiently and effectively leading to a accomplishment of the objective with remarkable ease. By rejuvenating themselves at physical, mental and spiritual levels simultaneously, students can enrich their individual lives and also bring about lasting change in their attitudes.

Education is viewed as an instrument to develop the cognitive qualities, tolerance and understanding of the students generation to understand and face the realities of globalization. In this context, the educational institutions and the teachers have more responsibilities in moulding the character of the students.

Emotional intelligence has become a popular phrase in recent times. It is a form of social intelligence which involves the ability to monitor one’s own and others feelings and emotions to discriminate among them and to utilize this information to guide one’s thinking and action (159:185-211). Emotional intelligence predicts success in all walks of life and this concept gained paramount importance in the field of educational and organizational research.
Aim of education is to produce well balanced individual rather than a lopsided individual. All the powers and capacities of the student should be developed in a harmonious manner. Personality refers to the habitual mode of adjustment, which the organization effects between its own egocentric drives and the exigencies of the environment.

An individual’s adaptability is indicated in the ways he solves the problems in his life. Life is a process of solving /dealing/managing with problems. Problem solving has special importance in the study of mathematics. The present society needs the student who can solve not only the mathematical problems but also the problems of other fields by applying the approaches that are used in solving mathematical problems.

The present study is concerned with the influence of emotional intelligence, personality traits on problem solving ability in mathematics among the college going Pre-university science students.

5.2 Genesis of the Problem

The present generation of students are more emotionally troubled than the last. On an average students are growing more lonely and depressed, more angry and unruly, more nervous and prone to worry, more impulsive and aggressive. So there is an increasing need to address the emotional health of our children and adolescents (1:22-25). Students with high emotional quotient (EQ) are more confident are better learners, have higher self esteem, have few behavioral problems, are more optimistic and happier. Emotional intelligence and personality factors are considered as basic requirement for the effective use of intelligence quotient (IQ). It is an affective adaptive capacity for smooth adjustment in our social life. Emotional intelligence means empathy, compassion,
motivation and ability to respond appropriately to external pain or pleasures (70:13).

In the era of science and technology, mathematics has become one of the important subjects of study because mathematics has become a part and parcel of new innovations and even the future is also mathematically inclined. Keeping in view the natural scope of mathematics and its unique role in solving life problems of students, mathematics has been considered as one of the core subjects at college level. Though the student has the liberty to learn the subject in his choice of medium of instructions, he find this subject as more heavily loaded with abstract concepts compared to other subjects. The parents and students at large consider mathematics as a difficult subject and this result in more number of failures in this subject. The rate of failure in mathematics is considerably higher than in other subjects.

The Pre – university examination results indicate that mathematics is one of the core subject in which considerable number of students fail every year in comparison to other subjects. There may be various reasons for this. The failure in the subject mathematics may be due to students inability to read, understand and interpret mathematical symbolism in a meaningful way. Another reason is that students take up science subject without having good aptitude in it. As some students are getting admission to science stream, other parents also wish to get their children admitted to science course. They think that getting seat in science stream is a matter of prestige for them. Pre-university colleges are not conducting aptitude test for admitting students to science stream.

Districtwise result of second year Pre – university science students was collected from Karnataka state Pre- university board. It clearly shows
that Bellary is one of the district which is getting very poor result with low percentage among science students. Hence, the investigator was interested in knowing the cause for poor result. The poor performance of Bellary district prompted the investigator to take up Bellary district for his study.

5.3 Need and Importance of the Study

In the modern world, mathematics is being increasingly used in science, technology, industry, economics, education and other subjects. The computers and other devices used often and often in mathematics. Mathematics has a prominent position in school and college level curriculum. The subject mathematics is an ancient discipline. Problem solving ability is one of the key concepts to understand the students ability to solve the problem provided in a situation, by making use of his previous knowledge and technique to find solution to the present situation.

In psychology “Problem” usually means a task that can be defined external to the individual such as maze, anagram, mathematical problem (or) other tasks in which an observation or openly stated answer or situation is provided. Problem solving ability is very essential in mathematics because problems and problem solving ability are the integral part of mathematics. Problem solving is the highest level of learning which depends on the mastery over lower types of learning and it involves application of principles and facts to explain and solve new phenomena or predict consequences from known conditions. Hence, problem solving can be defined as a process of overcoming difficulties that appear to interfere with the attainment of a goal. Problem solving is
far more useful as a guide to preparing students to be effective problem solvers in their every-day life.

Emotional intelligence is the capacity to create positive outcomes in relationships with others and with one-self. Thus emotional intelligence is an umbrella term that captures a broad collection of interpersonal skills and intrapersonal skills. Emotional intelligence plays a key role in determining life success. It becomes more and more important as people progress up the career ladder of their life. Emotions are our feelings, hence emotional intelligence is our life (99: 153-155).

Personality is a complex dynamic integration and is shaped by the inborn potentials as modified by experiences common to culture. As a general rule every healthy individual has some sort of integration. The peculiar form of integration in a particular individual are his personality traits.

Now-a-days the students are getting higher marks and ranks in their examination but they are not able to succeed in their life. Now it is found that “college age” is an important period in a student’s life as they are young, energetic and enthusiastic in this stage.

Scientific research indicates that the formation of emotional skills and personality traits is much easier in the “formative years from birth to the late teens”. Especially among college students highly achieving students facing a lot of problems like lack of self-confidence, violence, lack of motivation, drug abuse, examination anxiety, disinterest in their study habits, inability to manage their self, improper management of emotions, lack of leadership qualities, etc., it may hamper on their cause for poor achievement and inability to solve in their day to day problems.
And even it may some times lead to suicide tendency among them (114: 237-242).

Many of the studies conducted in India and abroad have concentrated research mainly at the primary and secondary level. The investigator feels that concerning the gap between emotional intelligence, personality traits and problem solving ability in mathematics these three variables and the Pre-university course is an important stage in the education of an individual. It is an stage to select diversified courses in his educational career. Most of the science students are aspiring for professional/technical/higher courses. In order to fulfill their desire, they will put in maximum efforts in the academic work for better future.

Problem solving skills are very essential for the students to obtain high scores and place themselves favourably in competitive examinations. So, students will become increasingly effective problem solvers more reflective and rational in life situations and solve more and more complex problems with greater independence and self confidence. Although freedom and independence is the foundation for better of humanism (39, 58 and 91).

Among the various factors that affect the problem solving ability in mathematics, the investigator has considered emotional intelligence and personality traits as some of the factors which affect problem solving ability in mathematics. In the light of this, the investigator decided to find out the relationship between emotional intelligence, personality traits and their impact on problem solving ability in mathematics among college going Pre-university science students. In such a situation, this motivates the investigator to undertake the present study.
5.4 Statement of the Problem

The problem of the present investigation is as follows:

“A study of the relationship between emotional intelligence and personality traits on problem solving ability in mathematics of college going first year Pre-university science students of Bellary district”.

5.5 Objectives of the Study

The present study is undertaken with the following broad objectives:

1. To measure the emotional intelligence of first year Pre-university science students.
2. To measure the personality traits of first year Pre-university science students.
3. To measure the problem solving ability in mathematics of first year Pre-university science students.
4. To find out the relationship between emotional intelligence and problem solving ability in mathematics of first year Pre-university science students.
5. To find out the relationship between personality traits and problem solving ability in mathematics of first year Pre-university science students.
6. To find out the interaction effect of emotional intelligence, personality traits on problem-solving ability in mathematics of first year Pre-university science students.
7. To develop the regression equation for problem solving ability in mathematics as criterion variable and using
emotional intelligence, personality traits as predictor variables among first year Pre-university science students.

8. To find out the percentage contributions of predictor variables towards the development of problem-solving ability in mathematics among first year Pre-university science students.

5.6 Scope of the Problem

In the present study, the investigator intends to study the problem solving ability in mathematics of first year college going Pre-university students in various rural and urban Pre-university colleges of Bellary district in relation to their psychological factors like emotional intelligence and personality traits. The sample consists of 680 first year science students. The study was limited to Bellary district science students (with Physics, Chemistry, Mathematics and Biology combination) only.

5.7 Review of Related Literature

Keeping in view the scope of the study the review of related literature was collected for the present study. The investigator collected the details of the studies based on key concepts extracted from the problem chosen for the study. The reviewed studies have been classified under three headings as follows.

5.7.1 Studies related to Emotional Intelligence

The investigator has reviewed 12 studies in this area.

5.7.2 Studies related to Personality Factors

In this area the investigator has reviewed 8 studies.
5.7.3 Studies related to Problem Solving Ability

In this area the investigator has reviewed 13 studies related to present study.

All reviews based on the above concepts helped the investigator in throwing a light on the path further so as to improve the quality of the research to be undertaken. But the literature on the relationship between emotional intelligence, personality traits and problem solving ability is scanty.

5.8 Methodology of the Study

In the present study, the investigator has attempted to know the effect of variables. Since the investigator has followed the descriptive survey method under which causal comparative and co-relational studies were used to study the independent, dependent and moderate variables.

5.9 Selection and Classification of Variables

Variables of the study

The variables used in the present study are classified into independent variables, dependent variable and moderate variables.

1. Independent Variables

In the present study, the two independent variables included are namely

a) Emotional Intelligence
b) Personality Traits

2. Dependent Variable

Problem solving ability in mathematics is considered as dependent variable in the present study.
3. Moderate Variables
   In the present study, the three moderate variables included are;
   a) Gender
   b) Locality
   c) Type of college

5.10 Definition of Technical Terms

5.10.1 Emotional Intelligence
   According to Goleman (77:375-378) “Emotional Intelligence refers to the capacity for recognizing our own feelings and those of other, for motivating ourselves and for managing emotions well in ourselves and in our relationships”.

   In the present study the investigator adopted the definition of Daniel Goleman (77) as operational definition. It is defined as “Emotional intelligence refers to the scores in each of the five dimensions such as self awareness, self regulation, motivation, social awareness and social skills separately obtained by him / her in the tool employed by the investigator”.

5.10.2 Personality Traits
   According to Cattell (27:62-66) “Personality is that which permits a prediction of what a person will do in a given situation”.

Traits
   Traits may be defined as “Relatively permanent and relatively consistent general behavior patterns that an individual exhibits in most situations”.

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According to Cattell (28:386) "A trait is a structure of the personality inferred from behavior in different situations".

In the present study the investigator adopted the definition of Cattell R.B. (28) as operational definition. It is defined as "Personality refers to the scores in each of the twelve traits viz., self-confidence, persistence, co-operativeness, emotional stability, emotional control, sense of responsibility, courtesy, sociability leadership, initiative, attitude towards self and attitude towards life separately obtained by him / her in the inventory employed by the investigator".

5.10.3 Problem Solving Ability in Mathematics

The dictionary meaning of problem is trouble, difficulty, crisis, puzzle, set back.

According to John P. Dececco (93: 428-479) "Problem solving as a form of principle learning in which lower order principles are applied in the learning of a higher order principles".

In the present study the investigator adopted the definition of John P. Dececco (93) as operational definition. It is defined as "The score obtained by the first year Pre-university science students in the possession of mathematical competencies or abilities to solve problems".

5.10.4 Gender

In the present study the term gender refers to both the boys and girls studying in first year Pre-university colleges of Bellary district.
5.10.5 Locality

It includes both urban and rural area Pre-university college science students.

5.10.6 Type of College

It includes both government and private Pre-university college science students of Bellary district.

5.11 Hypotheses of the Study

Based upon the discussion of variables and also keeping in view of objectives of the study. The following research hypotheses have been formulated for the present study.

1. There is no significant relationship between emotional intelligence and problem solving ability in mathematics among first year Pre-university science students.

2. There is no significant relationship between personality traits and problem solving ability in mathematics among first year Pre-university science students.

3. There is no significant difference in the mean scores of problem solving ability in mathematics among high, average and low emotional intelligence groups of first year Pre-university science students.

4. There is no significant difference in the mean scores of problem solving ability in mathematics among high, moderate and low personality traits groups of first year Pre-university science students.

5. There is no significant interaction effect of emotional intelligence and personality traits on problem solving ability in mathematics among first year Pre-university science students.
6. There is no significant difference in the mean scores of problem solving ability in mathematics of urban and rural first year Pre-university science students.
7. There is no significant difference in the mean scores of problem solving ability in mathematics of boys and girls of first year Pre-university science students.
8. There is no significant difference in the mean scores of problem solving ability in mathematics of government and private college first year Pre-university science students.
9. There is no significant interaction effect of gender and locality on problem solving ability in mathematics of first year Pre-university science students.
10. There is no significant interaction effect of gender and type of college on problem solving ability in mathematics of first year Pre-university science students.
11. There is no significant interaction effect of locality and type of college on problem solving ability in mathematics of first year Pre-university science students.
12. There is no significant relationship between different dimensions of emotional intelligence and problem solving ability in mathematics among first year Pre-university science students.
13. There is no significant relationship between different dimensions of personality traits and problem solving ability in mathematics among first year Pre-university science students.
14. The selected variables in the study viz., emotional intelligence and personality traits are the significant predictors of problem solving ability in mathematics among first year Pre-university science students.
5.12 Tools Used for the Collection of Data

The following tools were used for the collection of data in the present study.
1. Emotional Intelligence Inventory (ETI) developed by Shailendra Singh (2004), see the appendix-A.
2. Rajan’s Personality Trait Inventory (RPTI) developed by Dr. Sathyagiri Rajan (1990), see the appendix -B.
3. Problem Solving Ability Test in Mathematics constructed and validated by Investigator, see the appendix-D.

5.13 Sample of the Study

For the purpose of this study, 680 college going first year Pre-university science students (with Physics, Chemistry, Mathematics, Biology combination) of Bellary district during the academic year 2009-2010. Proportionate stratified random sampling technique was used to select the sample. Totally 14 Pre-university colleges (with science combination) were selected proportionately on random basis, out of these 14 college, 2 were urban government, 2 were rural government, 6 were urban private and 4 were rural private colleges. Proportion of rural and urban, government and private colleges is maintained in sampling. The sample was considered to be fairly true representative of the population since it included all types of Pre-university colleges and the sample included both boys and girls (340 boys and 340 girls) studying in Pre-university colleges of Bellary district.

5.14 Statistical Techniques Used for the Analysis of Data

The investigator has used the following statistical techniques for the analysis of data co-efficient of correlation was calculated between independent and dependent variables. The hypotheses formulated were
tested using the single classification analysis of variance (One way ANOVA, Two way ANOVA) and whenever ‘F’ value was found to be significant, Duncan’s procedure (Multiple range test) was used to test the significance of the mean difference of two groups, ‘z’ value also computed and multiple regression equation was established.

5.15 Findings and Conclusions of the Study

5.15.1 Major Findings of the Study

1. There is a significant relationship between emotional intelligence and problem solving ability in mathematics among first year Pre-university science students.

2. There is a significant relationship between personality traits and problem solving ability in mathematics among first year Pre-university science students.

3. There is a significant difference in the mean scores of problem solving ability in mathematics among high, average and low emotional intelligence groups of first year Pre-university science students.

3.1 There is a significant difference in the mean scores of problem solving ability in mathematics among high and average emotional intelligence groups first year Pre-university science students.

3.2 There is a significant difference in the mean scores of problem solving ability in mathematics among average and low emotional intelligence groups of first year Pre-university science students.

3.3 There is a significant difference in the mean scores of problem solving ability in mathematics among high and low
emotional intelligence groups of first year Pre-university science students.

4. There is a significant difference in the mean scores of problem solving ability in mathematics among high, moderate and low personality traits groups of first year Pre-university science students.

4.1 There is a significant difference in the mean scores of problem solving ability in mathematics among high and moderate personality traits groups of first year Pre-university science students.

4.2 There is a significant difference in the mean scores of problem solving ability in mathematics among moderate and low personality traits groups of first year Pre-university science students.

4.3 There is a significant difference in the mean scores of problem solving ability in mathematics among high and low personality traits groups of first year Pre-university science students.

5. There is a significant in the interaction effect of emotional intelligence and personality traits on problem solving ability in mathematics among first year Pre-university science students.

5.1 There is a significant difference in the mean scores of problem solving ability in mathematics between various groups of emotional intelligence among first year Pre-university science students.

5.2 There is a significant difference in the mean scores of problem solving ability in mathematics between various groups of personality traits among first year Pre-university science students.
5.3 There is a significant interaction between emotional intelligence and personality traits on problem solving ability in mathematics among first year Pre-university science students.

6. There is a significant difference in the mean scores of problem solving ability in mathematics of urban and rural area college first year Pre-university science students.

7. There is a significant difference in the mean scores of problem solving ability in mathematics of boys and girls of first year Pre-university science students.

8. There is a significant difference in the mean scores of problem solving ability in mathematics of government and private college first year Pre-university science students.

9. There is no significant interaction effect of gender and locality on problem solving ability in mathematics among first year Pre-university science students.

9.1 There is a significant difference in the mean scores of problem solving ability in mathematics between boys and girls of first year Pre-university science students.

9.2 There is a significant difference in the mean scores of problem solving ability in mathematics between urban and rural area college first year Pre-university science students.

9.3 There is no significant interaction effect of gender and locality on problem solving ability in mathematics among first year Pre-university science students.
10. There is no significant interaction effect of gender and type of college on problem solving ability in mathematics of first year Pre-university science students.

10.1 There is a significant difference in the mean scores of problem solving ability in mathematics among boys and girls of first year Pre-university science students.

10.2 There is a significant difference in the mean scores of problem solving ability in mathematics between government and private college first year Pre-university science students.

10.3 There is no significant interaction between gender and type of college on problem solving ability in mathematics among first year Pre-university science students.

11. There is no significant interaction effect of locality and type of college on problem solving ability in mathematics of first year Pre-university science students.

11.1 There is a significant difference in the mean scores of problem solving ability in mathematics between government and private college first year Pre-university science students.

11.2 There is a significant difference in the means scores of problem solving ability in mathematics between urban and rural college first year Pre-university science students.

11.3 There is no significant interaction between locality and type of college on problem solving ability in mathematics among first year Pre-university science students.

12. There is a significant relationship between different dimensions of emotional intelligence and problems solving ability in mathematics among first year Pre-university science students.
13. There is a significant relationship between different dimensions of personality traits and problem solving ability in mathematics among first year Pre-university science students.

14. Multiple regression analysis reveals that two independent variables like emotional intelligence and personality traits are found to be significantly correlated with the problem solving ability in mathematics among first year Pre-university science students. These two variables jointly contribute about 27 per cent variance in problem solving ability in mathematics among first year science students.

14.1 Step wise analysis reveals that the single best predictor of problem solving ability in mathematics is emotional intelligence. It was found that this variable contribute to about 19 per cent of the predictability of the problem solving ability in mathematics among first year Pre-university science students.

5.15.2 Discussion of the Results

(a) Emotional Intelligence

From the results obtained in the present study, it is observed that emotional intelligence and problem solving ability in mathematics of first year Pre-university science students are significantly correlated \( r = 0.439; p < 0.01 \) with each other.

However, the obtained mean scores of problem solving ability in mathematics with high, average and low emotional intelligence groups is 14.48, 12.00 and 9.06. These values indicate that the different groups of emotional intelligence have significantly contributes towards the problem.
solving ability in mathematics among first year Pre-university science students.

The results of one way analysis of variance indicate that the obtained ‘F’ value is greater than the theoretical value. Hence, it is significant beyond 0.01 level of probability (F = 111.4; p < 0.01). From the results obtained in the present study also reveals that there is a significant relationship was found between different dimensions like self awareness, self regulation, motivation, social awareness and social skills of emotional intelligence with problem solving ability in mathematics (r = 0.285, 0.260, 0.368, 0.372, 0.324; p<0.01) among first year Pre-university science students.

No supportive studies of these findings could be located and hence this result cannot be generalized.

(b) Personality Traits

In the present study, it is found that there is a significant positive relationship between problem solving ability in mathematics among first year Pre-university science students (r = 0.283; p < 0.01). The results of the present study is in concurrence with the results obtained by Ajwani (7), Gill Tejinderjit Kaur (75). They documented that intelligent pupils and introverts solving mathematical problems more cautiously and efficiently with facilitatory personality traits.

However, the obtained mean scores of problem solving ability in mathematics with different groups of personality traits such as high, moderate and low with mean value 13.44, 12.14 and 9.62 respectively. It is found that high, moderate and low personality traits groups have
significantly contribute towards the problem solving ability in mathematics among the Pre-university science students.

The results of one way analysis of variance indicates that the obtained ‘F’ value is more than the theoretical value. Hence, it is significant beyond 0.01 level of probability (F = 44.91, p < 0.01).

From the results obtained in the present study it is also found that students with different dimensions of personality traits such as self-confidence, persistence, co-operativeness, emotional stability, emotional control, sense of responsibility, courtesy, sociability, initiative, attitude towards life and attitude towards self are significantly correlated with problem solving ability in mathematics among Pre-university science students, but leadership trait did not show any significant relationship with problem solving ability in mathematics among Pre-university science students.

No supportive study of these findings could be located and hence this result cannot be generalized.

(c) Problem Solving Ability in Mathematics
1. Locality

From the results obtained in the present study it is found that students hailing from the urban area excelled over their counterparts in the rural area in their problem solving ability (z=3.57; p<0.01) in mathematics among the Pre-university science students.

The findings of the present study are also supportive to the findings of Singh and Radha Charan (177), James Anice and Marice (91). They
documented that urban students are superior to rural students in all levels of Green’s classifications of problem solving ability.

2. Gender

The study reveals that there is a significant gender difference existed in problem solving ability in mathematics among Pre-university science students. Girls are found to be better problem solvers than boys ($z = 2.22; p < 0.05$).

The findings of this study are confirmed by the findings reported by Darchingupai (39), Singh and Radha Charan (177) and Surinder Pal Kahlon (187), have shown that the girls have superiority over boys in their problem solving ability.

The findings of this study is also contradicts with findings of James Anice and Marice (91). They reported that boys are superior over girls in their problem solving ability.

3. Type of College

The results of the study indicates that there is a significant difference in the problem solving ability in mathematics of private college over government college science students ($z = 2.33; p < 0.05$).

Findings of this study reveal that the findings of Surinder Pal Kahlon (187) found that private school children show superior problem solving ability over government school children. The results of the present study is not in concurrence with the results obtained by Darchingupai (39), James Anice and Marice (91). They reported that students from government schools have shown favourable problem solving ability than private school students.
**Interaction Effects**

1. Interaction between emotional intelligence and personality traits on problem solving ability in mathematics.

   From the results obtained in the present study it is found that there is a significant interaction in the emotional intelligence and personality traits with problem solving ability in mathematics among Pre-university science students ($F = 36.54; p < 0.01$).

   No supportive studies of these findings could be located and hence these results cannot be generalized.

2. Interaction between gender and locality on problem solving ability in mathematics.

   The results of the present study reveals that there is no significant interaction between gender and locality on problem solving ability in mathematics among Pre-university science students ($F = 0.31; p > 0.05$), but gender and locality independently contribute towards students mathematical problem solving ability.

3. Interaction between gender and type of college on problem solving ability in mathematics.

   The results of present study reveals that there is no significant interaction between gender and type of college on problem solving ability in mathematics of Pre-university science students ($F = 0.003; p > 0.05$). However, gender and type of college separately impact on problem solving ability of the students.

   No enough supportive studies of these findings could be cited and hence these results cannot be generalized.
4. Interaction between locality and type of college on problem solving ability in mathematics.

The study reveals that there is no significant interaction was found between locality and type of college on students mathematical problem solving ability (F = 0.68; p < 0.05). Locality and type of college will not influence jointly on mathematical problem solving ability among students.

No such studies support the findings of the present study and hence these results cannot be generalized.

**Regression Analysis**

The findings of the present study reveals that the effect of selected independent variables on problem solving ability indicate that there is a significant relationship between emotional intelligence, personality traits with problem solving ability in mathematics among first year Pre-university science students (r = 0.439, r = 0.283; p < 0.01).

However, regression co-efficient indicates that the (R = 0.07, 0.06) for emotional intelligence and personality traits, further the value of R square suggests that 27 per cent of variance in problem solving ability is accounted for the selected variables. Among the predictors variables emotional intelligence contribute 19 per cent and personality traits 8 per cent of variance towards mathematical problem solving ability of the students who opted for the science group.

Step wise analysis shows that the single good predictor of mathematical problem solving ability is emotional intelligence those students studying in Pre-university science classes.
No supportive studies of these findings could be indicated and hence these results cannot generalized.

5.15.3 Conclusions of the Study

The investigator has drawn the following conclusions on the basis of findings of the study which are as follows:

1. Favourable significant relationship was found between emotional intelligence and problem solving ability in mathematics among first year Pre-university science students. Highly emotional intelligent students use more of problem solving skills in their life situations. They will able to handle their emotions properly and solve more complex problems with greater independence and self confidence.

2. Favourable significant relationship was found between personality traits and problem solving ability in mathematics among first year Pre-university science students. The findings clearly confirm the fact that emphasis should be laid on creating proper college climate to enhance the development of personality traits with necessary problem solving skills among students.

3. High, average and low emotional intelligence groups have significant influence on problem solving ability in mathematics among first year Pre-university science students.

4. High, moderate and low personality traits groups have significant influence on problem solving ability in mathematics among first year Pre-university science students.

5. The interaction effect of emotional intelligence and personality traits is significant in terms of their influence on problem solving ability in mathematics among first year Pre-university science students.

6. Urban students have better problem solving ability in mathematics than rural science students.
7. Significant gender differences were found in the students problem solving ability. Girls possess better problem solving ability than boys.

8. Private college first year Pre-university science students show better problem solving ability than those students studying in government colleges. This is because they have good study habits, method of teaching, college environment, making use of library books and study skills. The absence of these factors hampers their problem solving ability. Thus it may be concluded that the type of college with have significant impact on their problem solving ability.

9. Favourable significant relationship was found between different dimensions of emotional intelligence such as self awareness, self regulation, motivation, social awareness, social skills with problem solving ability in mathematics among Pre-university college science students. Thus, high emotional intelligence involves high self awareness, self regulation, motivation, better social awareness and social skills which have a strong association with problem solving ability among Pre-university science students.

10. Significant relationship was found between different dimensions of personality traits with problem solving ability in mathematics among Pre-university science students.

11. Emotional intelligence and personality traits are the best predictors of problem solving ability in mathematics among first year Pre-university college science students.

12. The single best predictor of problem solving ability in mathematics is emotional intelligence. Those students who have high emotional intelligence tend to become good problem solvers in their day-to-day life situations.
5.16. Limitations of the Study

The present study has certain limitations, they are:

1. The sample includes in the present study the students of the first year Pre-university colleges science (with Physics, Chemistry Mathematics and Biology combination) classes only.

2. Sample covers the randomly selected students from rural and urban Pre-university colleges of Bellary district.

3. Sample covers both boys and girls of randomly selected Pre-university college science students of Bellary district.

4. Sample includes government and private Pre-university colleges of Bellary district.

5. The present study includes the factors like emotional intelligence and personality traits are considered as independent variables and problem solving ability in mathematics is considered as dependent variable and their relationship and impactness is studied.

5.17 Educational Implications of the Study

The following educational implications may be suggested based on the results obtained in this study. Below are presented a few guidelines and suggestions which the parents, teachers and educational institutions might adopt in this regard.

The following activities are helpful in developing emotional intelligence among Pre-university students.

1. Self – awareness: Schools and colleges had a mission of developing self awareness among students and preparing them for future challenges. Schools and colleges should teach them how to manage themselves, better how to handle their rocky emotions, how to handle vicissitudes of life and so on. In all situations, self awareness of the
feelings and emotions are very important. This helps the students to solve the environmental problems better in manner.

2. Self regulation: Schools and colleges try to do away with the wrong notion that thought is most appropriate when not concluded by emotions. Try to develop the integration of thoughts and emotions, heart and mind for appropriate behavior at the right time. Therefore, do not try to suppress emotion, strike a balance between rational thought and self regulation of emotions. This is especially improvement for the distressing emotions of fear, pain and anger among students.

3. Motivation: Try to teach the students all emotions are healthy. The important thing is to learn the art of expressing one’s feeling or emotions in a desirable way. Students should get training in the art of self talk, internal dialoguing and self affirmation. They should be motivated towards some good idea in their life situation. Do not allow the negative emotions and feelings be obstacles in their path. Use them as a motivating agent for achieving their goals.

4. Social awareness: For understanding others and their feelings to develop the trait of a good listener. Students who have a high emotional quotient (EQ) also have a high scores on empathy. Try to teach the students express their feelings with an equal sense of attention and listening to others feelings for the better management of social relationships therefore lessons should be based on empathy.

5. Social skills: Try to practice and teach the students to develop the ability to understand feelings in the right manner both in oneself and others. In schools and colleges provide opportunity to learn the method of proper development of social skills for better communication and interpersonal relationship with others. These skills that provide young students with broad guidance and direction
for their actions in all aspects of their lives, in and out of school and college.

6. In schools and colleges there should be special lecturers on human relations taking help of some external agency for developing different aspects of emotional intelligence.

The following activities are helpful in developing personality traits among Pre-university students.

1. Schools and colleges should organize the personality development programmes that enhance the self - confidence, self awareness, persistence nature, co-operative attitude, leadership skills, communication skills, sense of emotional adjustment, social concern, sense of responsibility, interpersonal relationship, stress coping ability etc.

2. Schools and colleges should develop among students to maintain a positive attitude towards life.

3. Educational institutions should arrange character building activities that will lead to more emotionally balanced personality among students.

4. Curriculum should be modified at school and college level, so that lessons relating to development of emotional and social skills among students should be incorporated into the curriculum.

5. Educational institutions should encourage the students to participate in group activities like NSS, NCC, Scouts and Guides, stage performances, games and others will ensure the development leadership qualities among the students.

6. In schools and colleges the stress management and relaxation programmes can guide the students who are said to be under stress.
Yoga, Meditation and other programmes can reduce the stress among students.

7. Teachers must show recognition, affection, protection and devotion in hearing the child. They should help the students to have regularity of habit. These aspects may help to develop a positive attitude towards self.

The following activities are helpful in developing problem solving ability among Pre-university students.

1. Mathematics knowledge and skills should be applied to new or unfamiliar situations. For this reason, developing students to apply mathematical knowledge and skills in problem solving situations is essential. To teach problem solving effectively the classroom teachers need to be good problem solvers themselves, to acquire mathematical knowledge in solving and reflecting upon problems.

2. All students would like to make more efficient use of the thought process to solve problems effectively. Students are not born with readiness to solve problems. They may have innate ability but much has to be learnt. Education should help the students to become better problem solvers in this direction.

3. After the curriculum has been reframed, the most important step lies in reorienting school work and home work. It must consists of solving problems of all sorts. This way students will gather useful experiences which shall stand by them in their future life.

4. There is a need of encouragement to poor problem solvers instead of snubbing them. Give suitable praise when necessary.

5. The present study is also provided an eye opening issues about students hailing from urban areas excelled in their performance in problem solving ability. This finding should motivate educators in
rural colleges to engage the students in constructive activities that would inculcate creative and critical thinking ability among students. This goal could be achieved through peer discussions and debates so that their thinking and reasoning skills could be shared.

6. The present study also showed girls are found to excel boys in their problem solving ability. Therefore, boys students may be given more opportunities and freedom to express themselves in classroom situations, their responses and participation should be encouraged with positive reinforcement.

7. The present study has thrown adequate light on the type of college. The students studying in private colleges show superior problem solving ability over government college students. Arranging special lectures, small group discussion, mathematics puzzle, quiz programmes among government college students. This goal could be to revise their level of aspiration and to solve more and more complex problems with greater independence and self confidence.

8. On the basis of ability of students, he or she should be given an opportunity to work in a group project. Such an opportunity helps them to interact with the group and discuss with members of the group.

9. Educational institutions should try to teach everyday life skills. Such skills should promote social and emotional learning among all the students.

10. Perhaps a change in the evaluation process is required. Focusing more on assessing problem solving skills of the students rather than testing the outcomes of rote learning.

11. Guidance and counseling is also helpful. It may develop optimistic nature among students.
12. Media programmes can be very informative and educative for developing emotional intelligence and personality traits among students. Hence they should develop good habit of watching good and useful TV programmes and read important articles published in daily newspapers relating to mathematics.

5.18 Suggestions for Further Research

On the basis of the findings of the present study it is advisable to conduct further research work in the below mentioned field.

1. In the view of encouraging results obtained from this study, it will be worthwhile to replicate the study at other grade levels and with other subject matter fields like social science, languages, physics, chemistry. Work at the elementary and secondary level will be more useful.

2. An experimental study can be conducted on these variables and their effectiveness can be studied.

3. Similar studies may be conducted on intervention among the students with different kinds of special needs, that helps to uplift their social and psychological well being.

4. Similar studies could be conducted for studying the working teachers at primary school, secondary school and degree college level on their teaching effectiveness and achievement of the students.

5. Studies can be undertaken with different psychological factors like self concept, study habits, achievement motivation, creativity, test anxiety, critical thinking, brain dominance, mathematical aptitude on scholastic achievement among students at different level.

6. It may be interested to develop a new curriculum in mathematics keeping in view the specially designed teaching strategy so that context may be appropriately related to the teaching strategy designed
for the development of emotional intelligence, problem solving skills among students.

7. The study can be undertaken on the development package for the personality traits among students at different levels.

8. A similar study can be taken on D.Ed., B.Ed., M.Ed., and other courses of graduate and post-graduate students.

9. A similar study can be conducted in comparison with other groups such as Arts, Commerce, Engineering, Medical etc., courses.