CHAPTER-3

METHODOLOGY

3.0 INTRODUCTION

This chapter presents the research type, research design, population, sample, duration of the program, and, tools and techniques employed for the study. Also, it presents description of activities of the intervention program designed by the investigator. The data collection procedure has also been described.

3.1 RESEARCH METHODOLGY

3.1.1 Research type

It is a developmental-cum-intervention study employing quantitative, as well as, qualitative research methodology.

3.1.2 Research Design

The study has employed the Pre-Experimental Design Single Group Pre-Test-Intervention-Post Test.

3.1.3 The population for the study

Student-teachers of India at Secondary School level of academic session 2007-2008 constituted population for the present study.

3.1.4 The sample of the study

All the Student-teachers of academic session 2007-2008 at ICFAI College of Education, Dehradun comprised sample for the study. Sample size was the cluster of all these 51 student-teachers. Pre-test was administered on all of them. After pre-test, they were asked to volunteer for intervention program. 18 student-teachers out of 51 volunteered for the program. These 18 student-teachers comprised the sample for the intervention study.

3.1.5 Duration of the intervention program

Program was designed to develop various aspects of self and social skills. The program was designed for approximately 35 hours.

3.2 TOOLS AND TECHNIQUES

This program includes various activities and tests related to enhancing emotional competencies. The program focuses on various dimensions of human personality related to various aspects of self and society. Understanding of self is an important and first phase of any human development.

To enhance all these skills, various techniques were required that included activities at individual level as well as group level. The program comprises diverse activities like pen-paper exercise, observation, personal interviews, reflective dialogue, group discussion, individual and team games, role-play, case-analysis, technology enabled narrations and extempore.

Various tools and techniques were used for the purpose of intervention program. They are:

1) Program designed & developed by the investigator for enhancement of emotional maturity.
2) Observation
3) Discussion
4) Reflective Diary
5) In-depth interviews
6) Thematic Apperception Test
7) Technology Enabled Narrations
8) Field trip

Techniques of role-play, case analysis, games were also used.

The following tools were used for the purpose of the study:

Sr.no.	Name of the tool	Purpose of the tool
1	Emotional Maturity Scale	To find the status of student-teachers on emotional maturity
2	Personal Effectiveness Scale (General)	To find the status of student-teachers on their self-awareness in general and counseling in wanting domains.
3	Personal Effectiveness Scale (Teacher)	To find the status of student-teachers on their self-awareness as teacher and counseling in wanting domains.
4	Dealing with Emotions Scale	To increase emotional self-awareness of student-teachers on their tendency to ruminate and flow in life.
5	Locus of Control	To understand dynamics of internality, externality and, stable and variable factors of an individual and their effect on self-motivation.
6	Attribution of Success and Failure (General)	To assess the respondent's attributional thinking—to what they attribute success and failure to. Counseling in wanting domains is helpful in self-motivation.
7	Attribution of Success and Failure (Teacher)	To assess the respondent's attributional thinking as a teacher—to what they attribute success and failure to in matters related to teaching profession. Counseling in wanting domains is helpful in self-management as a teacher.

8	Motivation Profile (Intrinsic and Extrinsic)	To help participants aware of their motivational factors and to make them understand that without intrinsic motivation creative work cannot be done and growth does not occur.
9	Interpersonal Need Inventory	To measure interpersonal needs of student-teachers, and counsel them accordingly, and help them to enhance social skills.
10	Transactional Style Inventory	To assess interaction styles of student-teachers as a teacher and develop strategies to enhance their interpersonal effectiveness and so. Social- management competencies.

Description of the various tools and techniques is given as follows:

Emotional Maturity Scale:

For the purpose of pre-test and post-test and realization of objective 1 and 3, the standardized scale of emotional maturity was used for the study. The scale was developed by Dr. Yashwir Singh and Dr. Mahesh Bhargava. Five broad factors of emotional immaturity are listed in the scale. They are emotional unstability, emotional regression, social maladjustment, personality disintegration and lack of independence.

(a) Emotional unstability is a broad factor representing syndrome of lack of capacity to dispose off problems, constant help for one's day to day work, irritability, needs, vulnerability, stubbornness and temper tantrums.

(b) Emotional regression is a broad group representing factors like feeling of inferiority, restlessness, hostility, aggressiveness and self-centeredness.

(c) Social maladjustment means an individual shows lack of social adaptability, show hatred, seclusive but boasting and is a shirker.

(d) Personality disintegration means person showing disintegration with personality, like reaction, phobias formation, rationalization, pessimism, immorality, suffers from inferiority complex and hence reacts to environment through aggressiveness, destruction and has distorted sense of reality.

(e) Lack of independence means parasitic dependence on others, is very egoistic and lacks 'objective interests', and generally are considered by others as unreliable.

RELIABILITY

The reliability of scale was determined by Test-retest reliability and internal consistency. For test-retest reliability, the time interval between the two testing was that of six months. The product moment 'r' between the two testing was 0.75. the internal consistency of the scale was checked by calculating the coefficients of correlations between total scores and scores on each of the five areas. Table given below shows the values of internal consistency:

Sr.no.	Areas	'r' Value
1	Emotional Unstability	0.75
2	Emotional Regression	0.63
3	Social Maladjustment	0.58
4	Personality Disintegration	0.86
5	Lack of Independence	0.42

VALIDITY

The scale was validated against fourth area of the adjustment inventory by Sinha and Singh. The numbers of items in this area are 21. Product moment correlation obtained between total scores on all twenty-one and total scores on emotional maturity scale was found to be 0.64.

It is self-reporting five-point scale. Items are so stated that, the higher the score on the scale, greater the degree of the emotional immaturity and vice-versa.

Various instruments were used during intervention program. The following instruments were developed by Dr. Udai Pareek (2002). These instruments are widely used for research, training and human resource development.

Personal Effectiveness Scale (General)

This scale assumes that better self-awareness is an important precondition for personal effectiveness. The scale considers a simple model of self-awareness called Johari window. In this model, there are two main dimensions for understanding the self: those aspects of a person's behavior and style that are known to him (self) and those aspects of his behavior that are known to those with whom he interacts (others). A combination of these two dimensions reveals four area of knowledge about the self:

	Known to self	Not known to self
Known to others	Arena (A)	Blind (B)
Not known to others	Closed (c)	Dark (D)

The *arena* or the public self is that part of an individual's behavior known both to himself and to those with whom he interacts. This includes information such as name, age, physical appearance, and familial or organizational affiliation.

The *blind* area contains those aspects of the person's behavior and style that others know but the person himself does not know about. For example, a person may be unaware that his behavior is perceived by others as funny, annoying or pleasing.

The *closed* area involves that which is known to the person but not revealed to others; things that are secret or person is unwilling to reveal.

The *dark* area is inaccessible to both self and others. This includes hidden aspects of a person that even the person is not aware of.

This scale only considers arena, blind and closed areas. The size of the arena or open space is critical for personal effectiveness. Arena increases in proportion to the decrease in the blind and the closed area. Openness has two aspects: self-disclosure and openness to feedback. In addition, perceptiveness or sensitivity to other's feelings and non-verbal cues, is also important

This scale scores self-disclosure, openness to feedback and perceptiveness. Based on the combination of these three, it shows the effectiveness type of an individual.

Sr.no.	Category	Self-disclosure	Openness to feedback	Perceptiveness
1	Effective	High	High	High
2	Insensitive	High	High	Low
3	Egocentric	High	Low	Low
4	Dogmatic	High	Low	High
5	Secretive	Low	High	High
6	Task-obsessed	Low	High	Low
7	Lonely empathic	Low	Low	High
8	Ineffective	Low	Low	Low

RELIABILITY:

Alpha was found to be 0.90.

USE OF THE INSTRUMENT:

The participants will know about their status of particular category and can improve that according to the development need. This will help in increasing personal effectiveness of the participant by emphasizing on deficient areas.

Personal Effectiveness Scale (Teacher):

This scale gives personal effectiveness types in terms of self-disclosure, feedback and perceptiveness in the same manner as personal effectiveness scale (general). Conceptual framework is also same as the previous scale. It contains 15 statements, five for each of the three aspects. The respondent has to respond on 5-point scale, indicating the extent to which it is true for him or her.

Rumination: Dealing with Emotions scale

When we sit alone or day-dream and recall all our miseries, misfortunes, failures, or bad experiences with several people, it is called *rumination.* Sitting in groups and talking about past miseries and current disappointments is also rumination. On the other hand, when we recollect our good experiences, enjoy such recollection, or are involved in a highly absorbing activity, it is called *flow*. Rumination is dysfunctional and damaging; it makes the situation even worse. Obsessive analysis also leads to rumination.

People who mull over bad events are called ruminators. A ruminator can either be an optimist or pessimist. Optimist ruminators are action-oriented. They have a pessimistic explanatory style, but when they talk to themselves, it is usually about what they plan to do, not about how bad things are. Pessimist ruminators repeatedly tell themselves how bad things are. Positive ruminators learn from the experience.

The concept of flow is opposite of rumination. It is deep involvement in positive activity and thought. The person, in flow, lives in present and future, by recollecting good and positive experiences and by being involved in activities that one enjoys.

There are two ways to deal with rumination. The first is simply to distract oneself when pessimistic beliefs occur- try to think of something else. The second is to dispute them; this is more effective in long run, because successfully disputed beliefs are less likely to recur when the same situation presents itself again.

This instrument contains seven items. Three items are pairs; the respondent is required to choose one item in each pair. The others contain statements which the respondent is required to rate on a five point scale, indicating the frequency of occurrence.

RELIABILITY:

Reliability was found by Guttman split-half index, which was found to be 54, and equal-length and unequal-length Spearman- Brown indices were 55. Guttman Lambada ranged from 44 to 74.

USE OF THE INSTRUMENT:

This will help participants to know their explanatory style of past life events. They will know how positive and negative explanatory styles may affect their effectiveness and therefore can develop ways of reducing rumination.

Locus of Control (LOCO) Inventory:

The concept of locus of control by Levenson (1972) is used to develop this inventory. The locus of control orientations are reflected in the way people feel about what happens, how much control they, other significant persons, or neither (being a matter of luck), have in important matters. In locus of control, loci can be either internal or external. People who have low perception of their own abilities and resources are called to be internals or said to have internal locus of control. They believe outcomes are the results of chance rather then their own action. Internality is related to effectiveness and adjustment. People who have high perception of others and luck effecting outcomes are called externals or are said to have external locus of control.

RELIABILITY:

Split-half reliability coefficient for the instrument were 0.43, 0.45 and 0.55 respectively for I, E-O and E-L sub-scales, and even-odd reliability coefficients were 0.41, 0.48 and 0.54 respectively.

VALIDITY:

High correlation (0.89) was found to be between Levenson's instrument and loco inventory which indicates the validity of the inventory.

USE OF THE INSTRUMENT:

This inventory can be used both for research and training purpose. It can give more insight into dynamics of internality and externality, including correlates of internality and both types of externality. This instrument is very useful for the purpose of intervention by improving self-awareness, self-confidence and other factors.

Motivation Profile

What do you look for in a job? Measures intrinsic and extrinsic motivation, or what are known as Herzberg's motivator's and hygienes.

This instrument is based on Herzberg's theory of work motivation. His theory is called two-factor theory of motivation as he discusses two main classes of the deficit and development needs. He classified the various needs into, what he called, hygiene factors (which may prevent dissatisfaction) and motivators (factors which may provide satisfaction). The former needs are contextual (external or extrinsic) and the later relate to the content of the job (internal or intrinsic).. Seven intrinsic motivational factors are: advancement, interesting work, respect and recognition, responsibility and independence, achievement, a technically competent supervisor, and an equitable pay. The seven extrinsic motivational factors are: security, adequate earnings, fringe benefits, comfortable working conditions, sound company policies and practices, a considerate and sympathetic supervisor, and restricted hours of work.

This instrument contains total 14 items, seven related to intrinsic and seven related to extrinsic motivation.

RELIABILITY:

Split half reliability was found to be 0.88.

VALIDITY:

Factor-analysis (principal axis factoring with varimax solution) of data, using two-factor solution was found.

USE OF THE INSTRUMENT:

This instrument is used to help participants become aware of their motivational profile. Without intrinsic motivation creative work cannot be done, and growth does not occur.

Attribution of Success and Failure- General (ASUFA-G)

This inventory assesses the respondent's attributional thinking- to what they attribute success and failure to (internal or external, and the stable or variable factors). This is concerned with perception of causal attribution

This inventory has 32 items (pairs). The inventory contains 16 items for success and 16 for failure. It considers following measures of attribution:

1. Self-directedness: It is defined as high personal internality. A self-directed person will exercise his or her choices in most situations.
2. Group-directedness: It is defined as high collective internality. A group-directedness person will follow norms and work with his/her team to influence situation.
3. Conformity: It is defined as high personal externality. A conformist will be guided by the wishes of the significant persons.
4. Fatalism: It is defined as high non-person externality. A fatalist will attribute most outcomes to external forces and is not likely to exercise much effort to bring about change.
5. Optimism: it is defined as attributing failure and miseries to variable factors both internal and external.
6. Pessimism: It is defined as attributing success variable and miseries to stable factors (both internal and external).
7. Hope: It is defined as the ratio between attribution to variable and attribution to stable factors.

8. Self-confidence: It is defined as the ratio between internality and externality.

RELIABILTY

Split-half reliability was found significant at 0.01 level (76).

VALIDITY

The construct validity of attribution to internal-external or stable-variable factors as independent constructs has been established.

USE OF THE INSTRUMENT:

The participants will know their scores on different attributional factors. They can plan their own way to deal with the problem and can discuss with experts.

Attribution of Success and Failure- Teacher (ASUFA-T)

This instrument is designed for measuring and enhancing teacher's level of optimism and other related aspects. Conceptual framework, reliability, validity and use is same as the above instrument.

Interpersonal Needs Inventory (IPNI)

Schutz (1958) (as cited in Pareek, U., 2002), drew attention to three basic interpersonal needs among people: inclusion, control and affection. His main contribution was suggestion of directionality in each of these three needs, what he termed as *expressed* (giving to others) and as *wanted* (receiving from others).

Schutz defined three needs behaviorally (Schutz, 1966, as cited in Pareek, U., 2002) as follows:

The interpersonal need for inclusion is defined behaviorally as the need to establish and maintain a satisfactory relationship with people with respect to interaction and association. With regard to feelings, the need for inclusion is defined as the need to establish and maintain a feeling of mutual interest with other people. With regard to the

concept of self, the need for inclusion is the need to feel that self is significant and worthwhile.

The interpersonal need for control is defined behaviorally as the need to establish and maintain a satisfactory relationship with people with respect to control and power. With regard to feeling, the need for control is defined as the need to establish and maintain a feeling of mutual respect for the competence and responsibility of others. With regard to the concept of self, the need for control is defined as the need to feel that one is competent and responsible person.

The interpersonal need for affection is defined behaviorally as the need to establish and maintain a satisfactory relationship with others with respect to love and affection. At the feeling level, the need of affection is defined as the need to establish and maintain a feeling of mutual affection with others. At the level of self-concept, the need for affection is the need to feel that the self is lovable.

According to Pareek, U., (2002), in addition to inclusion, individual has a basic need for recognition by others and giving recognition to others. The control need or the power need is mush more complex. It includes need to control (direct matters and behavior of others) and to influence (make an impact on others).

For this inventory, it is proposed that the following six basic needs may be useful to develop a theory and instruments for interpersonal relationships:

The need for interaction:	belonging and recognition
The need for relationship:	affiliation and extension
The need for power:	control and influence

The two aspects called *expressed* and *wanted* by Schutz are termed *giving* and *receiving*. This gives rise to twelve interpersonal needs:

Belonging giving
Belonging receiving
Recognition giving
Recognition receiving
Affiliation giving

Affiliation receiving

Extension giving

Extension receiving

Control giving

Control receiving

Influence giving

Influence receiving

RELIABILITY:

Cronbach Alpha was found to be 0.97.

USE OF THE INSTRUMENT:

This instrument is useful for the purpose of training as well as individual counseling. It can be useful for participants to get insight into their patterns of interpersonal behavior. An interpretation of total scores can be helpful in understanding the dynamics of an individual's interpersonal style and so can help in improving personal and professional relationships.

Transactional Style Inventory

The habitual way of person's interacting with others can be called his or her interpersonal style or transactional style. Each person involved in transaction with others has three ego states as following:

1. *The parent:* Regulates behavior (through prescriptions and sanctions) and nurtures (by providing support).
2. *The adult:* Collects information and possess it.
3. *The child:* Has several functions, primarily concerned with (a) creativity, curiosity and fun, (b) reactions to others (including rebellion) and (c) adjusting to other's demands, or sulking.

Each ego state is important. However, the functional and dysfunctional roles of these ego states depend on the general existential or life positions person takes. Harris

(1969) (as cited in Pareek, U., 2002) has conceptualized four primary existential or life positions:

1. I'm OK- you re OK;
2. I'm not OK- you are OK;
3. I'm OK- you are not OK; and
4. I'm not OK- you are not OK.

Following are the four life positions in terms of interaction style:

		You	
		Not-OK	OK
I	Not-OK	Avoidance	Diffident
	OK	Bossing	Competent Confident Confronting Creative

In this inventory, two dimensions of parent ego state (critical or regulating and nurturing), three of the child ego state (adaptive, reactive and free or creative) and the adult ego state are used. Each ego state meets some basic need. Six basic needs are met by six ego states which can be OK or not-OK. These are:

1) The need to express love and care, manifested as nurturing parent (OK) or Rescuing parent (not-OK).
2) The need for power, faith and self-confidence as firm parent (OK) or critical parent (not-OK).
3) The need to think and evaluate information as an adult (OK), or any not-OK ego state.
4) The biological needs and the need to feel and experience simulation a natural child (OK) or as a person (not-OK).
5) The need to be creative or intuitive as a little professor (OK) or a rebellious or defensive child (not-OK).
6) The need for approval and safety as an adapted child (OK) or a helpless child (not-OK).

The transactional style of a person depends on the person's combination of the six ego states with the life positions. Combining the six ego states (two parent, one adult and three child) with two life positions (OK and not-ok), we obtain 12 styles. These are shown here:

Ego states	**Styles in two life positions**	
	Not-OK	**OK**
Nurturing parent	Rescuing	Supportive
Regulating parent	Prescriptive	Normative
Adult	Task-obsessive	Problem-solving
Creative child	Bohemian	Innovative
Reactive child	Aggressive	Assertive
Adaptive child	Sulking	Resilient

From the above 12 (6+6) styles in two life positions, the following key is given by author to find DS (dominant style) and BS (back-up style).

Style	**Ego state**	**Items**
Supportive	OK nurturing parent	1, 13, 25
Rescuing	Not-OK nurturing parent	8, 20, 32
Normative	OK regulating parent	3, 15, 27
Prescriptive	Not-OK regulating parent	10, 22, 34
Problem-solving	OK adult	5, 17, 29
Task obsessive	Not-OK adult	12, 24, 36
Innovative	OK creative child	11, 23, 25
Bohemian	Not-OK creative child	6, 18, 30
Assertive	OK reactive child	9, 21, 33
Aggressive	Not-OK reactive child	4, 16, 28
Resilient	OK adaptive child	7, 19, 31'
Sulking	Not-OK adaptive child	2, 14, 26

For finding out the dominant style (DS), write the name of the style which has the highest score amongst the 12 rows. If two or more rows have the same score, no specific DS is indicated. For finding out BS, write the name of the style which has the next highest score. If more then one style has the same score, no specific BS is indicated. This is neither good nor bad. In both DS and BS, it may either mean flexibility of styles, or no specific DS or BS has emerged.

USE OF THE INSTRUMENT

This instrument is intended primarily for training. A respondent can examine scores for each of his or her ego states and prepare a plan for behavioral change based on the related items- by reducing the not-OK behavior and improving on the OK behavior.

Description of Activities

Various activities were designed to enhance all the five dimensions. Activities are classified and presented according to the dimensions.

Self-awareness:

a) **Activity 1**: it is a pen paper exercise for self analysis. Student-teachers will be given handouts which require them to write their attributes that others know, that others do not know, that they do not want to show, that they want to develop in order to be a good person and a good teacher. After they complete this hand-out, investigator will discuss individually with each of them and will prepare notes. This will be helpful in collecting basic information about the participants and will be helpful in establishing rapport with them as this will be the first activity. This activity is also useful as it will help in winning confidence of student-teachers so that they can confide in investigator during the progress of intervention program.
b) **Activity 12**: It is a pen paper exercise wherein respondents are supposed to write words or sentences or draw anything related to various aspects of their life which are mentioned in the handout. They have to write about their innerself, profession, father, mother, family and friends.
c) **Activity 15**: A painting was shown to all the participants and they will be asked to interpret the painting as they understand or perceive it. The painting includes a flying bird and many colors. Painting is not very clear, it is slightly

blurred and colors are mixing in each other. This painting will help in understanding about what they are thinking (positive or negative) and what is important to them.

Self-management:

a) **Activity 19**: This is introspection and reflection on given topic. Are you satisfied with you time-management? Think of an incident where you feel you could have managed your time properly and would have achieved more. This exercise will help participants for improving by self-analysis. They were briefed beforehand that it is always good to learn from our own mistakes as it is only a person himself who knows about him or her accurately.

b) **Activity 20:** This is also introspection and reflection on factors related to success and failure. What do you feel is more responsible for your success and failure, your ability and effort or luck and other related people?

c) **Activity 11**: A story *'Who moved my cheese?'* will be narrated to them and analysis of various characters of story will be done by discussion. The story is quite inspiring and written for all ages. It helps in developing insight which can help a person to anticipate change, adapt to it and be ready to change quickly, again. The story is written by Dr. Spencer Johnson, he has authored other five bestsellers which has become the most popular management method in the world.

The story includes four characters. Two mice sniff and scurry and two littlepeople Hem and Haw. Long ago in a land far away, there lived four little characters who ran through a maze looking for cheese to nourish them and make them happy. Sniff and scurry possessed simple brains and looking for better opportunities, quite alert always, and used their simple train-and-error method to find cheese. Hem and Haw possessed complex brains with many beliefs and emotions and complex ability to think and depend on past experiences.

One fine day, they found their own kind of cheese at the end of one of the corridors of the maze. Sniff and scurry were confident but alert but getting the cheese and kept inspecting surrounding areas in maze. Hem and Haw were over-confident and proud of getting cheese and started being lazy and take it for granted.

One morning when they returned to maze, as usual, to their surprise, there was no cheese. Sniff and scurry were noticing the change that cheese is getting over and so were prepared for outcome and knew instinctively what to do. They laced up their shoes and took off running through the maze in search of new cheese. By now, they were also aware of the different directions and corridors of maze as they kept inspecting earlier. Hem and Haw were ignoring the change; they started thinking that cheese would always remain there and this cheese is their right. They were unprepared and started yelling and screaming on top of their voices, " It is not fair, this cannot happen to us". They ranted and raved at the injustice and went home depressed and discouraged. Hem kept analyzing the situation over and again and was still trying to decide what to do. They were frustrated and started blaming each other for not being aware of the change.

Haw thought of sniff and scurry and wondered if they had found any cheese, he believed they might be having hard time running through the maze as it always involved some uncertainty but he also knew that it always lasts for a while. He started imagining sniff and scurry enjoying new cheese and suddenly exclaimed "lets go". Hem responded "No, it is comfortable here, it might be dangerous out there, I do not want to get lost and make fool of myself."

Every morning they returned to the cheese station thinking that cheese will reappear but it never happened. They were

growing weak and stressed. Finally, one day Haw realized what his fear was doing to him and he ventured out into the maze with a smile on his face. While Hem kept shouting, "wait, it was our cheese, it will come back to us." On his way in maze, Haw found bits and pieces of cheese to regain his strength and he started feeling better. He decided to return to Hem and tell him about this but Hem said, "I do not like new cheese, my old one was better then this, it will come back soon." Haw smiled and said, "old beliefs do not lead you to new cheese" and he started his journey alone.

Haw proceeded along corridors and after good amount of struggle found new cheese station, where sniff and scurry were already enjoying the cheese in best of their health. Haw wondered if Hem will ever let go the old cheese and move on or he would not change.

The moral of the story is:

Change happens.
Anticipate change.
Monitor change.
Adapt to change quickly.
Change.
Enjoy change.
Be ready to change again.

Self-motivation:

a) **Activity 4 (a):** Respondents will be given handouts to tick mark on the various factors that motivate them. These factors mainly included hobbies, incentives, family and friends.

b) **Activity 4 (b):** Pen paper exercise to write about strengths and achievements. This exercise will be helpful in self-motivation as after writing about this,

participants will have sense of achievement. In case, there is less number of achievements, it is investigator's responsibility to counsel the participants and motivate them.

c) **Activity 5**: Discussion on achievements of Stephen Hawking. The biography, disease and achievements of Stephen Hawking were narrated to participants.

He was born on 8th January, 1942 (300 years after the death of Galileo) in Oxford, England. After receiving his B.A. degree at Oxford University in 1962, he stayed to study astronomy. Around 1965, he started developing symptoms of amyotrophic lateral sclerosis, a motor neuron disease, which results in increasing paralysis as time goes. After the disease had stabilized and with the help of his doctoral tutor, Dennis William Sciama, he returned to working on his Ph.D. By 1974, he was unable to feed himself or get out of bed. His speech became slurred so that he could only be understood by people who knew him well. 1985, he caught pneumonia, which made him unable to speak at all. A Cambridge scientist built a device that enables Hawking to write onto a computer with small movements of his body, and then have a voice synthesizer speak what he has typed.

Hawking's principal fields of research are theoretical cosmology and quantum gravity. With his disease, his achievements and fame was also increasing. In the late 1960s, he and his Cambridge friend and colleague, Roger Penrose, applied a new, complex mathematical model they had created from Albert Einstein's general theory of relativity. This led, in 1970, to Hawking proving the first of many singularity theorems; such theorems provide a set of sufficient conditions for the existence of a singularity in space-time. This work showed that, far from being mathematical curiosities which appear only in special cases, singularities are a fairly generic feature of general relativity.

He supplied a mathematical proof, along with Brandon Carter, Werner Israel and D. Robinson, of John Wheeler's "No-Hair Theorem" –

namely, that any black hole is fully described by the three properties of mass, angular momentum, and electric charge.

Hawking also suggested that, upon analysis of gamma ray emissions, after the Big Bang, primordial mini black holes were formed. With Bardeen and Carter, he proposed the four laws of black hole mechanics, drawing an analogy with thermodynamics. In 1974, he calculated that black holes should thermally create and emit subatomic particles, known today as Hawking radiation, until they exhaust their energy and evaporate.

Prof. Hawking has given many lectures in general public. Many of his lectures are published in his book '*Black holes and the baby universes and other essays*' released in 1993. Below are the some of the most recent public lectures:

Godel and the end of physics. This is about how far we can go in search for understanding and knowledge. Will we ever find a complete form of laws of nature?

My life in physics. This includes his journey for understanding physics.

The origin of the universe, The beginning of time, The nature of space and time, Space and time warp, Does God play dice?, *Life in the universe.*

He has been awarded many awards and honors. In November, 2006 Physicist Stephen Hawking received the highest award for scientific achievement for his work in theoretical physics and cosmology.

The Copley medal first was awarded in 1731 by the Royal Society, Britain's elite scientific academy. Previous recipients have included Charles Darwin, Albert Einstein, Louis Pasteur and Capt. James Cook.

d) **Activity 10(a):** Wooden blocks game to test achievement drive. Participants will be asked to raise a tower of wooden blocks. First, they have to estimate how many blocks they can put on each other. They will be given one minute to raise the tower. The difference between number of blocks arranged and number of blocks estimated will show their sense of achievement motivation.

Social-skills:

a) **Activity 6:** This is a reflective dialogue and discussion on a given problem. Your first appointment is in very remote area in hills. There is no proper sanitation and you cannot take your family along due to many factors which also includes inclement weather and unavailability of transport and medical facilities. Residents of village are not motivated for education and main occupation is farming. What do you think, is your social responsibility? Participants will be asked to put forward their views on the given problem and discuss in group.

b) **Activity 3**: It is reflective written exercise. Respondent will be asked to reflect on some issues from movie 'Blue Umbrella'. It is feature film based on the story written by well-known story writer Mr. Ruskin Bond.

It is story involving two main characters, Biniya, a small girl of around 10-11 years and Khatri, greedy old shopkeeper. The story is based in small hilly village. The story goes like:

Once Biniya was wandering in village and happens to meet some Japanese tourists who were carrying beautiful and big blue umbrella. Biniya had an ornament of beads around her neck with special features of that particular region. Tourists liked that ornament and wanted to exchange it for money but she was not interested in money. They offered her umbrella which she liked

and exchanged ornament for it. All this conversation was non-verbal as they did not know each other's language; this conversation only involved signs and expressions.

Biniya starts moving around in village with blue umbrella. When Khatri saw this, he wanted it on any cost and he plays many tricks to get that umbrella from her, till he was successful in his plan. Biniya gets very upset and calls police but in vain, he hides it somewhere else. Finally, she is able to get her umbrella from him and he is declared thief in village and there was a social boycott of Khatri by the villagers. Khatri was all alone, depressed, no one turns to his shop anymore. He starts deteriorating mentally and physically. Biniya was again upset to his condition and decides to go back to him and intentionally forgets the umbrella on his shop. But this time, Khatri comes running after her to give her the umbrella but she moves away.

Participants had to analyze few scenes from the film:

1) Conversation between Biniya and tourists.
2) Her feelings when she lost her umbrella.
3) Feelings of Khatri when she brings police to his place.
4) Mental state of Khatri after social boycott.
5) Comparison of two scenes:

When Khatri is disturbed and children are teasing him and all background is blue and there is snowfall, and Biniya is standing far off under umbrella.

The other scene: when she gives him umbrella and moves away and he is standing under umbrella, and the background is again blue with snowfall.

c) **Activity 16**: Respondents were asked to design any activity where they can show empathy and service orientation. They can do this activity in pair or in a group of three or four people. This activity will be helpful in enhancing their organizing ability and decisiveness also.

Social-management:

a. **Activity 2**: Case-analysis to be done. Case is related to problem of late-comers in school.

Ms. Desai is a teacher and always have first lecture of the day. Three students Aditya, Vijay and Shruti always enter the class 5 or 10 minutes late even after regular punishments . She thinks about the issue and tries to find out some solutions to the problem. She think of using some harsh words like: "Don't you know, what time the class starts? Or, you people are so undisciplined and you will never be able to rise up in your life with this attitude. Or, if you keep of repeating this behavior, I shall complaint to higher-ups and ask for your termination or suspension." Then she decides to ask them to remain out of the class for her lecture and she feels why to show any concern, let them be out and loose on studies, they will understand themselves.

For this problem, what suggestions you can give to Ms. Desai. Do you think any of the above solutions will be effective? What do you think will be the best solution for this problem?

Participants have to analyze and discuss the case.

b. **Activity 7**: Role play and reverse role play will be done. Theme will be related to observing science day in school. General instructions and theme of role play:

Your school observes science day on every 28th February. Since last three years, Ms. Anshula was taking this responsibility of observing science fair. She left the school few days back. The entire staff are aware of the fact that though, Ms. Anshula tried her level best, working day and night for organizing the science day, her efforts were never recognized and appreciated by the senior teachers.

The science day organization is a Herculean task because inspite of prior preparations, some small problems may emerge at

the eleventh hour which need to solved then and there. Since the staff members have seen Ms. Anshula, they can perceive that it is a job that requires immense commitment and no appreciation in return by the seniors.

Brief for Principal: You are the principal of a reputed school. Your dedicated staff member Ms.Anshula left the school, who used to take responsibility of organizing science day. You are aware that none of the staff members is ready to take this responsibility now because of previous experiences of Ms. Anshula. You have called Ms. Akanksha for a meeting as you want to put it across to her that she is chosen to organize the science day this year.

Breif for Ms. Akanksha: You are Ms. Akanksha, a science teacher, teaching in a reputed school. One of the staff member Ms. Anshula has left the school who was responsible for organizing the science day to be observed on 28th February. The job entails lot of commitment and passive response from other staff members. Most of the staff members are neither enthusiastic nor cooperative for organizing science day because they perceive it as an unnecessary burden just few days before the final exams. After putting in so much effort for the science day celebration, staff members are usually very fault-finding and critical of the person who organizes it.

Principal has called you for the meeting as he wants you to take the responsibility of organizing science day this year.

This role play will help in evaluating and enhancing skills of communication, influence, conflict management, teamwork and collaboration.

After role play discussion will conducted to understand the crisis and find the solutions.

c. **Activity 9**: Respondents will be asked to organize a field trip. Investigator will ask participants to organize a field trip. Investigator will remain passive participant. Participants will be asked to decide the place, convince everybody, arrange for transportation, meals etc.

d. **Activity 10(b):** Respondents will have to prepare a tower of wooden blocks in pair. Wooden blocks of size 5 x 5 cm^2 with thickness around half centimeter will be given to participants they have to raise a tower in pairs. Wooden blocks will vary in size more or less 1 or 2 cm. one person will be blindfolded and arrange blocks on each other with guidance of other teammate who can instruct for size and shape of the tower and arrangement of blocks.

e. **Activity 17**: Brainstorming session including stimulating questions related to leadership and change catalyst.

f. **Activity 18**: Inspirational speech to be given by respondents. Participants will be asked to deliver a speech which is inspirational in nature. Topic for the speech has to be decided by the participants himself. They will be given 10 minutes to prepare the speech.

   This will help to enhance influential skills, communication and they will gain confidence for public speaking.

3.3 DATA COLLECTION PROCEDURE

All the emotional skills to be enhanced were under five main clusters: self-awareness, self-management, self-motivation, social skills and social-management. The complete intervention program was conducted in total 9 sessions. Main intervention was done in 7 sessions of 5 hours each and then one session was conducted for counseling and debriefing the participants and other for post-intervention-test and interpretation.

Every session of the main program included one starting lecture and PowerPoint presentation about the dimension to be focused on that particular day, followed by

administration of related instruments and activities. Participants were asked to reflect on briefly about what they gained that day and will be given home assignment to reflect upon the complete session.

Table 3.3.1: Intervention Program schedule

Week	Theme	Sub dimensions	Content	Methodology	Resource Material
1. 1st June 08	Context Setting	_____	- IQ vs. EQ - Pre-test - Pre-test scoring - Personal interview	- Lecture cum presentation - Testing - Interpretation - Q&A	- Emotional maturity Scale
2. 8th June o8	Self-Awareness	Emotional awareness Accurate self-assessment Self-confidence	- Concept & Theory - Application of theory - Scoring - Activity 1 - Activity 12 - Activity 15 - Test-Instruments	- Ppt presentation - Home-assignment (reflection on results of instrument) - Pen paper exercise (Act 1 & 12) - Projection Technique (Act 12 & 15)	- Personal Effectiveness (G) (p-141, Pareek) - Personal Effectiveness (T) (p-146, Pareek) - Dealing with emotions (p-200, Pareek) - Painting for activity 15 - Handouts for activity 12 & 1
3. 15th June	Self-Management	Self-control Trustworthiness	- Concept & Theory - Application	- Ppt presentation - Home-	- LOC (p-156, pareek)

08		Conscientiousness Adaptability	of theory - Scoring - Activity 19 (Are you satisfied with your time managemen t?) - Activity 20 (whom do you attribute your success and failure to?) - Activity 11 (Story telling) - Test instruments	assignment (reflection on results of instrument) - Introspection (Activity 19 & 20) - Story telling (Activity 11) - Testing	- Handouts for activity 19, 20. - Story from "Who moved my cheese?"
4. 22nd June 08	Self Motivation	Achievement drive Initiative Commitment Optimism	- Concept & Theory - Application of theory - Scoring - Activity 4(a) - Activity 4(b) - Activity 5 - Activity 10 - Test instruments	- Ppt presentation - Home-assignment (reflection on results of instrument) - Pen paper exercise (Activity 4 a, b & 5) - Building tower of blocks (Activity 10) - Testing	- ASUFA (G) (p-174, pareek) - ASUFA (T) (p-182, pareek) - Handout for activity 4 (a), 4 (b). - Discussion on Stephen Hawkins (act 5) - What do you look for in a job? (p-227, Pareek)
5. 29th June	Social Skills	Empathy Service-	- Concept & Theory - Application	- Ppt presentation - Home-	- IPNI (224, Pareek) - Movie

08		orientation Organizational-awareness	of theory - Scoring - Activity 3 - Activity 6 - Activity 16 - Test instrument	assignment (reflection on results of instrument) - Reflection dialogue and group discussion for video clips - Pen paper exercise - Group discussion for activity 6 - Project Method for activity 16 - Testing	(Blue umbrella) for activity 3 - Handout for activity 6
6 & 7 6th,13th July 08	Social Management	Developing others Influence Communication Conflict-management Leadership Change catalyst Building bonds Teamwork & collaboration	- Concept & Theory - Application of theory - Scoring - Activity 2 - Activity 7 - Activity 9 - Activity 10 (b) - Activity 18 - Test instrument	- Ppt presentation - Games - Home-assignment (reflection on results of instrument) - Case analysis (act 2) - Role play (Activity 7) - Field trip (Activity 9) - Games (Activity 10 b) - Public speaking (Activity 18) - Testing	- Transactional styles (p-355, pareek) - Handouts (activity 2 & 7) - Wooden blocks (activity 10 b). - Scripts for role play
8. 20th July 08	Conclusion	_____	Interpretation of few tests	Counseling / Debriefing	_____

9. 27th July 08	Follow-up	_____	Discussion Difference Scoring (post test) Interpretation	Personal discussion Difference Scoring	_____

Data was collected dimension wise. Every week there were activities and tests related to one dimension as follows:

1st week:

General discussion about emotional maturity and pre-test were conducted.

2nd week:

Activities and tests related to first dimension **self-awareness** were administered. This included:

d) PowerPoint presentation on theory and concept of self-awareness.
e) Activity 1: it is a pen paper exercise for self analysis. This exercise include good amount of introspection and self-analysis.
f) Activity 12: it is a pen paper exercise wherein respondents are supposed to write words or sentences or draw anything related to various aspects of their life which were mentioned in the handout.
g) Activity 15: a painting was shown to all the participants and they have to interpret the painting as they understand or perceive it.
h) Personal effectiveness scale, which scores general effectiveness in group and also effectiveness as a teacher. This is a training instrument which is used for knowing the present status and counseling and discussion on the basis of results.
i) Dealing with emotions. This scores rumination and ability to flow of an individual.

3rd week:

Following activities and tests related to second dimension, i.e., **self-management,** were administered:

d) PowerPoint presentation of theory and concept of self-management.

e) Locus of control inventory. This reflects internality and externality of people as factors related to their effectiveness.

f) Activity 19: this is introspection and reflection on given topic. Are you satisfied with you time-management? Think of an incident where you feel you could have managed your time properly and would have achieved more.

g) Activity 20: this is also introspection and reflection on factors related to success and failure. What do you feel is more responsible for your success and failure, your ability and effort or luck and other related people?

h) Activity 11: A story *'Who moved my cheese?'* will be narrated to them and analysis of various characters of story will be done.

4th week:

Following activities and tests related to third dimension, i.e., **self-motivation,** were administered:

e) PowerPoint presentation of theory and concept of self-motivation.

f) Activity 4 (a): Respondents were given handouts to rank the various factors that motivate them.

g) Activity 4 (b): Pen paper exercise to write about strengths and achievements.

h) Activity 5: Discussion on achievements of Stephen Hawkins.

i) Activity 10(a): Wooden blocks game to test achievement drive.

j) Attribution of success and failure- General (ASUFA-G): This inventory is designed to measure and enhance level of optimism and related aspects.

k) ASUFA- Teacher: This inventory is designed to measure and enhance teacher's level of optimism and related aspects.

l) Intrinsic and extrinsic motivation: what do you look for in a job? Instrument was administered.

5th week:

Following activities and tests related to fourth dimension, i.e., **social-skills,** were administered:

a) PowerPoint presentation of theory and concept of social skills.

b) Activity 6: This is a reflective dialogue and discussion on a given problem. Your first appointment is in very remote area in hills. There is no proper sanitation and you cannot take your family along due to many factors which also includes inclement weather. Residents of village are not motivated for education and main occupation is farming. What do you think, is your social responsibility?

c) Activity 3: It is reflective written exercise. Respondent were asked to reflect on some issues from movie 'Blue Umbrella'.

d) Activity 16: Respondents were asked to design any activity were they can show empathy and service orientation.

e) Interpersonal need inventory was administered.

6th and 7th week:

Following activities related to fifth dimension, i.e., **social-management** were administered:

g. Activity 2: Case-analysis was to be done. Case related to problem of late-comers in school.

h. Activity 7: Role play and reverse role play was conducted. Theme was related to observing science fair in school.

i. Activity 9: Respondents were asked to organize a field trip.

j. Activity 10(b): Respondents were asked to prepare a tower of wooden blocks in pair.

k. Activity 18: Inspirational speech to be given by respondents.

l. Transaction styles inventory was administered.

8th week: Post-intervention test was administered. Interpretation of remaining tests was done. Personal discussion, counseling and debriefing was done.

9th week: Results of post-test were discussed individually. Respondents were asked to give comments about the intervention program.

3.4 DATA ANALYSIS PROCEDURE:

Data analysis was done as follows:

1. Emotional maturity of student-teachers was scored as mentioned in the scale manual.
2. Quantitative analysis of all the instruments was done as per the scoring procedure mentioned in the manual. These instruments are mainly used for the purpose of training to give more insight into particular dimension of an individual.
3. Content analysis was done with help of experts for all the activities designed by the researcher.

The data analysis procedure is described in chapter four along with data analysis.