CHAPTER VI

SUMMARY AND CONCLUSION

6.1 Introduction

“Education is no guarantee of decency, prudence, or wisdom. More of the same kind of education will only compound our problems [...] It is not education, but education of a certain kind, that will save us.” - David Orr

The relationship between education and sustainable development was first recognised on an international level at the 1972 Stockholm Conference on the Human Environment. Principle 19 of the Stockholm Declaration calls for environmental education from grade school to adulthood to "broaden the basis for enlightened opinions and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension". Individuals are vital to deliver pro-environmental change, not just for themselves (on the level of individuals) but also within organisations and communities as ‘agents for change’. Engaging and nurturing key individuals may be more effective in bringing about system-wide change than targeting the behaviour of all individuals. We need a radical, dynamic and holistic environmental education for our students especially adolescents to bring that system-wide change in society. By the ages of 13 and 14, adolescents are in a stage called moralism; they have an increasing awareness of themselves, and their decisions are based on a combination of cognitive and affective components (Rejeski, 1982). The implications for these developmental stages for environmental education are numerous. Environmental education should include opportunities for children to acquire topical, temporal, affective, and perceptual displacement; be presented within a concrete context that children can easily understand; and most importantly, really effective environmental education will begin at young ages and be organized to build upon past learning as the child develops (Rejeski, 1982).

Environmental educators hope that education can help participants develop a more internal locus of control, and acquire a strong environmental awareness so that their environmental attitudes, and ultimately behaviour, will be environmentally mindful.
The resulting practical concern, therefore, is what teaching/learning strategies will be most effective in promoting this process. Outdoor experiences have been most frequently cited as resulting in environmentally mindful attitudes and behaviours (Chawla, 1998; Palmberg & Kuru, 2000; Harvey, 1990). Sia (1984) believes that the more skillful in citizen action skills and the more knowledgeable of action strategies an individual is, the more likely he or she will behave in an environmentally responsible manner. It is the belief of an individual in his own capacity to be an agent of change that is to make a meaningful difference in a situation. Individuals often end up knowing what is wrong but can in no way understand what should be done by them neither can they see or connect how they too are responsible for environmental problems and appreciate how they need to help solve issues by changing their own life styles. Experiential approaches help to develop such an understanding and direct the course of EE towards the goals of Tbilisi Declaration (1978) such as creating “new patterns of behaviours of individuals, groups and society as a whole towards the environment and guiding principles such as utilizing diverse learning environments ........ and approaches to teaching-learning about and from the environment with due stress on practical activities and first-hand experience”. This type of approach involves students in their communities and utilizes teaching strategies which are student centered actively involving them in the learning process. They become knowledge creators (for themselves) as well as knowledge generators. Most importantly experiential learning emphasizes life skills that students will continue use in their future work and throughout their lives.

6.2 Emergence of the Problem

There is an urgent need to consider the development of life skills in wake of clear call to reform traditional education systems, which appear to be out of step with the realities of modern social and economic life. UNICEF has extended the use of life skills into environmental education. Environmental Education lays the foundation for learning skills that are in great demand in today’s job markets. Environmental educators hope that only a right kind of education can help developing the sustainable world. The resulting practical concern, therefore, is what teaching/learning strategies will be most effective in enhancing life skills, learning about sustainability and the adoption of sustainable behaviour.
Chawla (1998) argues that “free encounters with the natural world are becoming inaccessible to younger people in an increasingly urbanized world”. Therefore it is critical that we utilize experiential approach to teaching-learning about and from the environment with due stress on practical activities and first-hand experience. This type of approach involves students in their communities and utilizes teaching strategies which are student centered actively involving them in the learning process. They become knowledge creators (for themselves) as well as knowledge generators. Most importantly experiential learning emphasizes life skills that students will continue use in their future work and throughout their lives. Experiential Learning Strategies also nurture a respect for our connectedness with nature and the wider community. This connectedness flows over into an awareness of our relatedness to others in the community and leads to responsible environmental behaviour.

Individuals often end up knowing what is wrong but can in no way understand what should be done by them neither can they see or connect how they too are responsible for environmental problems and appreciate how they need to help solve issues by changing their own life styles. So, there is a need to understand and respond to complex environmental issues in a way that promotes environmental responsibility. It can help participants develop environmental awareness so that their environmental attitudes, and ultimately behaviour, will be environmentally mindful.

The implications for the younger people especially adolescents for environmental education are numerous. Therefore, we need a radical, dynamic and holistic environmental education for our school going adolescent population to bring system-wide change in society. Experiential Learning in EE enables adolescents to practice citizenship, critical thinking and group communication skills through activities. There should be restructuring of education systems to incorporate learning modeled by Environmental Education methods. These strategies, if adopted in schools, will promote skill building and pave the way for effective citizenship in complex world.

However, most of the studies measure the effectiveness of Environmental Education in relation to environmental awareness, knowledge and attitudes (Jaus, 1982; Hungerford and Volk, 1990; Soutar et al., 1994; Rickinson , 2001; Tonglet et al. , 2004 ; Meinhold & Malkus 2005 ;Kalantari et al. , 2007) Although attitudes are
inarguably an important consideration when addressing behaviour, little consensus exists on how, and to what extent, attitudes affect and can predict environmental behaviour. But most studies (Ramsey and Rickson as cited in Iozzi, 1984; Tonglet et al., 2004; Meinhold & Malkus, 2005; Kalantari et al. 2007) suggest that Environmental Knowledge is the significant moderator for the relationship between environmental attitudes and environmental behaviour. Attitudes do have some impact therefore, it is important to explore and understand the psychological constructs and mechanisms particularly EE methodology by which attitudes may be changed, particularly when pursuing behaviour change.

There is scarcity of research on pedagogical strengths of EE methodology in Indian class rooms. Learning modeled by experiential techniques has been found to be more effective in developing problem solving life skill (Whitfield and Hicks, 1993; Pario, 1997), critical thinking life skill (Gokhle, 1995; Ernst and Monroe, 2004; Robinson, 2005; Hofreiter et al., 2007), leadership life skills (Heinsohn and Cantrell, 1986; Boyd et al., 1992), decision making skills (Astroth, 1996; DiEnno and Hilton, 2005) and critical life skills such as working with groups, understanding self, communicating, making decisions and leadership responsibility, and interpersonal skills and social skills (Heinsohn and Cantrell, 1986; Boyd et al., 1992; Astroth, 1996; Stafford et al., 2003). Research studies conducted by Jernstedt, 1995; Sharon et al., 2003 and Signal Hill Group Inc, 2004 reported that experiential learning activities were significantly more effective at raising academic achievement as well as in developing life skills. Pario (1997) reported that students who worked on the computer-based puzzle game in cooperative learning pairs showed significant improvement in their problem solving ability. However studies by Latterell (2003) and Stafford et al. (2003) have not established significant effect of experiential learning on problem solving life skill.

These studies on selected life skills are scanty and in most of these studies experiential techniques were not integrated in the formal education system and moreover impact of experiential environmental education on selected life skills of adolescents in relation to psychological hardiness still remains unexplored.

There are few studies to establish that hardiness has impact on the development of selected life skills. However, these studies are conducted only on army cadets to
establish the impact of hardiness on leadership skills (Bartone, 1999; Bartone and Snook, 2000). Smith (1995) reported that hardiness scores of students were positively correlated with problem-focused coping. But there is a lack of research to provide any conclusive evidence. Therefore interactive effect of psychological hardiness and experiential learning on life skills needs to be investigated.

There is research evidence (Sivek and Hungerford, 1989; Ramsey, 1993; Cottrell, 2003) to establish that both internal and external factors interplay in shaping a pro-environmental behaviour, but these studies don’t fill the knowledge-action gap. On the other hand some research findings (Shepard and Speelman ,1986 ; Howe and Disinger, 1988; Whitfield and Hicks, 1993; Culen, 1994) analyzed the effectiveness of experiential learning on pro-environmental behaviour but without taking psychological hardiness (commitment, control and challenge) into account. The synergistic effect of experiential learning and psychological hardiness on pro-environmental behaviour is of significance and needs to be analysed in Indian conditions.

The most studied and researched dimension of psychological hardiness is locus of control and it has been found that stronger locus of control is predictor of pro-environmental behaviour (Sivek and Hungerford, 1989; Newhouse, 1990; Mittelstaedt et al., 1999; Cleveland et al. ,2005). Even locus of control has been found to be changed by the outdoor experience to impact the environmental behaviour of students (Hammit et al., 1995). But there is lack of studies which establish the effect of hardiness as composite variable on the life skills and environmental behaviour of students.

There are studies which establish the stronger relationship of hardiness with organizational citizenship behaviour than with health and wellness (Turnipseed, 2003). But there is lack of studies emphasizing relationship between hardiness and pro-environmental which also falls under the category of citizenship behaviour.

We may say that behaviour is product of the individual and its environment and experiential learning offers us a chance to explore and shape our behaviours towards the environment and ourselves. Hence there is a need to assess the efficacy of
different approaches to EE in relation to psychological hardiness for the development of life skills and pro-environmental behaviour.

This led the researcher to undertake the study of effect of experiential learning on the students varying on the scores of hardiness to develop life skills and ultimate progression to pro-environmental behaviour, as it would be of much importance in education reform.

6. 3 Statement of the Problem

Effect of Experiential Learning on Life Skills and Pro-Environmental Behaviour of Secondary School Students in relation to Psychological Hardiness

6. 4 Operational Definitions of the Variables

6.4.1 Experiential Learning

It is learning through experience. It may be defined as the process of acquiring knowledge directly; the learner applies theory and concepts in a real world situation and learns from outcome. It refers to set of activities as used by the investigator for giving treatment to one of the two groups.

6. 4. 2 Life Skills

Life skills refer to abilities, knowledge, attitudes and behaviours that enable a person to adapt to and master life situations at home, school and in any other context. Two life skills targeted by experiential learning methods undertaken in this study are:

- Problem Solving Skill
- Critical Thinking Skill

6. 4. 2. 1 Problem Solving Skill

Problem solving skill is defined as goal directed sequence of cognitive operations which enable a person to adapt to internal/external demands or challenges. Operationally Problem solving skill is defined as the scores obtained by the students
on The Problem Solving Inventory (PSI) by Heppner (1988) which assesses one’s perception of problem-solving abilities.

6.4.2.2 Critical Thinking Skill

Critical thinking skill includes higher cognitive abilities and skills which enable a person to interpret, analyse, evaluate and infer on the basis of information to make unbiased and self-regulatory judgement. Operationally Critical thinking skill is defined as the scores obtained by the students on critical thinking Essay test evaluated by using Critical Thinking Skill Rubric devised by Hofreiter et al. (2007)

6.4.3 Pro-Environmental Behaviour

Pro-environmental behaviour is the behaviour with the largest potential benefits for the environment. Pro-environmental behaviour may be defined as the extent to which a person consciously seeks to minimize the negative impact of his actions on natural and built world.

Operationally it may be defined as the scores obtained by the students on Pro-Environmental Behaviour Scale developed and standardized by the investigator.

6.4.4 Psychological Hardiness

Psychological Hardiness is defined as a constellation of three dispositions-control, commitment and challenge and summation of three determines global hardiness. Operationally it is defined as the scores obtained by the students on Psychological Hardiness Scale constructed and standardized by Nowack (1990)

6. 5 Delimitations of the Study

Delimitations of the present study are as follows:-

- The study was confined to English medium Government Model Senior Secondary schools of Chandigarh.
- The study was limited to a sample of 260 students including 128 girls and 132 boys of 9th class of four schools of Chandigarh.
- The present study was limited to two instructional methods namely.
A. Instructions through Experiential Learning Strategy.

B. Instructions through Traditional Teaching Strategy.

- The study was delimited in terms of number of activities taken in experiential learning strategy.
- The study was delimited with respect to dependent variables of life skills namely critical thinking and problem solving and pro-environmental behaviour and independent variable of psychological hardiness.
- The study was delimited with respect to the tools. The results were based on the data collected by using these tools and interpretations were governed by theoretical considerations underlying these tools.
- The study was delimited in terms of limited number of activities taken under Experiential Learning Strategy.
- The study was delimited with respect to duration of treatment. Both the groups were taught for one hour on an average for 50 days.

6.6 Objectives of the Study

1. To develop experiential learning program on environmental education for class IX students.

2. To develop and standardize a scale on Pro-Environmental Behaviour.

3(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean reduced scores on Problem Solving Life Skill.

3(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean reduced scores on Problem Solving Life Skill.

3(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Problem Solving Life Skill.

4(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Critical Thinking Life Skill.
4(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Critical Thinking Life Skill.

4(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Critical Thinking Life Skill.

5(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Pro-Environmental Behaviour.

5(b) To study whether groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Pro-Environmental Behaviour.

5(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Pro-Environmental Behaviour.

6(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Green Consumer Behaviour dimension of Pro-Environmental Behaviour.

6(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Green Consumer Behaviour dimension of Pro-Environmental Behaviour.

6(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Green Consumer Behaviour dimension of Pro-Environmental Behaviour.

7(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour.

7(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour.

7(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour.
8(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour.

8(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour.

8(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour.

9(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Conservation Behaviour dimension of Pro-Environmental Behaviour

9(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Conservation Behaviour dimension of Pro-Environmental Behaviour

9(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Conservation Behaviour dimension of Pro-Environmental Behaviour

10(a) To study whether the groups taught through Experiential Learning Strategy and Traditional Teaching Strategy differ in mean gain scores on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour.

10(b) To study whether the groups with High Psychological Hardiness and Low Psychological Hardiness differ in mean gain scores on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour.

10(c) To study whether there is any interaction effect between Teaching Strategies and Psychological Hardiness on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour.
6.7 Hypotheses

H₀₁. There will be no significant difference in the mean reduced scores on the Problem Solving Skill between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

H₀₂. There will be no significant difference in the mean reduced scores on the Problem Solving Skill between groups with High Psychological Hardiness and Low Psychological Hardiness.

H₀₃. There will be no significant interaction between instructional strategy and Psychological Hardiness on the Problem Solving Skill.

H₀₄. There will be no significant difference in the mean gain scores on the Critical Thinking Skill between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

H₀₅. There will be no significant difference in the mean gain scores on the Critical Thinking Skill between groups with High Psychological Hardiness and Low Psychological Hardiness.

H₀₆. There will be no significant interaction between instructional strategy and Psychological Hardiness on the Critical Thinking Skill.

H₀₇. There will be no significant difference in the mean gain scores on the Pro-Environmental Behaviour between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

H₀₈. There will be no significant difference in the mean gain scores on the Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

H₀₉. There will be no significant interaction between instructional strategy and Psychological Hardiness on the Pro-Environmental Behaviour.

H₀₁₀. There will be no significant difference in the mean gain scores on the Green Consumer Behaviour dimension of Pro-Environmental Behaviour between...
groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

**H011.** There will be no significant difference in the mean gain scores on the Green Consumer Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

**H012.** There will be no significant interaction between instructional strategy and Psychological Hardiness on the Green Consumer Behaviour dimension of Pro-Environmental Behaviour.

**H013.** There will be no significant difference in the mean gain scores on the Waste Reduction Behaviour dimension of Pro-Environmental Behaviour between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

**H014.** There will be no significant difference in the mean gain scores on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

**H015.** There will be no significant interaction between instructional strategy and Psychological Hardiness on the Waste Reduction Behaviour dimension of Pro-Environmental Behaviour.

**H016.** There will be no significant difference in the mean gain scores on the Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

**H017.** There will be no significant difference in the mean gain scores on Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

**H018.** There will be no significant interaction between instructional strategy and Psychological Hardiness on the Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour.
H₀₁₉. There will be no significant difference in the mean gain scores on the Conservation Behaviour dimension of Pro-Environmental Behaviour between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

H₀₂₀. There will be no significant difference in the mean gain scores on Conservation Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

H₀₂₁. There will be no significant interaction between instructional strategy and Psychological Hardiness on the Conservation Behaviour dimension of Pro-Environmental Behaviour.

H₀₂₂. There will be no significant difference in the mean gain scores on the Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour between groups taught through Experiential Learning Strategy and Traditional Teaching Strategy.

H₀₂₃. There will be no significant difference in the mean gain scores on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

H₀₂₄. There will be no significant interaction between instructional strategy and Psychological Hardiness on the Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour.

6.8 Design of the Study

A 2x2 factorial design was used in the present study. To study the main effects of the independent variables of Teaching strategy and Psychological hardiness on the dependent variables of two life skills namely Problem Solving Skills, Critical Thinking Skill, and Pro-environmental behaviour and its dimensions namely Green consumer behaviour, Waste reduction behaviour, Recycling and reuse behaviour, Conservation behaviour and Lobbying litigation and administrative intervention, statistical technique of 2x2 analysis of variance was used.
The variable of teaching strategy was coded as A and its two strategies namely Experiential Learning Strategy and Traditional Teaching Strategy as $A_1$ and $A_2$ respectively. The variable of Psychological hardiness was coded as B and its two levels namely High Psychological Hardiness and Low Psychological Hardiness as $B_1$ and $B_2$. In order to categorize students in High psychological hardiness group and Low psychological hardiness group, Kelley’s Method was used. Top 27% cases formed high group and bottom 27% cases formed the low group. A Layout of the factorial design used in the study for the variables of Teaching strategies and Psychological hardiness is presented in figure 6.1.

![Diagrammatic layout of 2x2 factorial designs for the variables of teaching strategy and Psychological Hardiness](image)

**Fig. 6.1 Diagrammatic layout of 2x2 factorial designs for the variables of teaching strategy and Psychological Hardiness**

This design was replicated for Problem Solving Skills, Critical Thinking Skill and Pro-environmental behaviour and its dimensions namely Green consumer behaviour, Waste reduction behaviour, Recycling and reuse behaviour, Conservation behaviour and Lobbying litigation and administrative intervention.

### 6.9 Sample

All the students studying in class IX in different government senior secondary schools (affiliated to CBSE) of Chandigarh formed the population for the present study.

The technique employed for sampling in the present study was multistage randomization of clusters at school level and section level. Firstly, the researcher
procured a list of Government Senior Secondary Schools in Chandigarh from the office of District Education Officer, Sector-9, Chandigarh. There were 56 government senior secondary schools in Chandigarh. Out of these four schools were selected randomly. There were two sections in each of these schools thus selected. Further, each section was assigned to one of the two Teaching Strategies namely Experiential Learning Strategy and Traditional Teaching Strategy by employing randomization. Thus two groups namely Experimental \((A_1)\) and Control \((A_2)\) were formed. The school wise break-up of the sample is given in Table 6.1

**Table 6.1**

Distribution of sample school wise

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of school</th>
<th>Class</th>
<th>Section</th>
<th>Group</th>
<th>Boys</th>
<th>Girls</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Govt. Model Senior Secondary School, Sector-20, Chandigarh</td>
<td>IX</td>
<td>A</td>
<td>Experimental Control</td>
<td>15</td>
<td>16</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
<td>17</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Govt. Model Senior Secondary School, Sector-23, Chandigarh</td>
<td>IX</td>
<td>B</td>
<td>Experimental Control</td>
<td>20</td>
<td>17</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td></td>
<td>15</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Govt. Model Senior Secondary School, Sector-37, Chandigarh</td>
<td>IX</td>
<td>B</td>
<td>Experimental Control</td>
<td>19</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td></td>
<td>13</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Govt. Model Senior Secondary School, Sector-40, Chandigarh</td>
<td>IX</td>
<td>A</td>
<td>Experimental Control</td>
<td>17</td>
<td>15</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
<td>16</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL STUDENTS</td>
<td></td>
<td></td>
<td></td>
<td>132</td>
<td>128</td>
<td>260</td>
</tr>
</tbody>
</table>

240
6.10 Tools used

The following tools were used for the present study:

1. Instructional material for experiential learning program on environmental education for giving treatment to experimental group (developed by investigator).
2. The Problem Solving Inventory (PSI) By Heppner (1988).
4. Pro-Environmental Behaviour Scale developed and standardized by investigator herself
5. Psychological Hardiness Scale by Nowack (1990)

6.11 Procedure

The following procedure was adopted for conducting the study:

Phase I: Administration of the Pre-test

Phase II: Conducting the instructional Program

Phase III: Administration of the Post-test

Phase I: Administration of the Pre-test

The present study was conducted on 260 class IX students from four Govt. Model Sr. Sec. Schools. This phase involved the administration of the following tests to the whole sample

- Problem solving Inventory (PSI)
- Critical Thinking Essay Test
- Pro-Environmental Behaviour Scale(PEBS)
- Psychological Hardiness Scale
The sample was divided into two groups namely experiential learning group and traditional teaching group depending on the teaching strategies employed as already explained while describing the sample.

**Phase II: Conducting the Instructional Program**

Forty activity/activities plans involving experiential learning strategy were delivered for a period of fifty days for one hour on an average excluding the days of pre-testing and post- testing to experiential learning group. These were based on “learn-by-doing” approach and students experienced something with minimal guidance from teacher. Instead of being told “the answers,” they were presented with a question, problem, situation, or activity. Traditional Teaching group was taught same lessons through traditional teaching strategy by investigator adopting Lecture Method for the same duration as the group taught through experiential learning strategies. Performance assessment of this group was made by weekly and monthly tests as practiced in schools these days.

**Phase III: Administration of the Post-test**

This phase involved the administration of the following tests to the students of both groups (experimental and control )

- Problem Solving Inventory (PSI)
- Critical Thinking Essay Test
- Pro- Environmental Behaviour Scale(PEBS)

The layout of the procedure is given in the Table 6.2
Table 6.2
Layout of the Procedure

<table>
<thead>
<tr>
<th>Phases</th>
<th>Group A₁</th>
<th>Group A₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>• Problem solving Inventory (PSI)</td>
<td>• Problem solving Inventory (PSI)</td>
</tr>
<tr>
<td>(Administration of the Pre-test)</td>
<td>• Critical Thinking Essay Test</td>
<td>• Critical Thinking Essay Test</td>
</tr>
<tr>
<td></td>
<td>• Pro-Environmental Behaviour Scale(PEBS)</td>
<td>• Pro-Environmental Behaviour Scale(PEBS)</td>
</tr>
<tr>
<td></td>
<td>• Psychological Hardiness Scale</td>
<td>• Psychological Hardiness Test</td>
</tr>
<tr>
<td>Phase II</td>
<td>Experiential Learning Strategy</td>
<td>Traditional Teaching Strategy</td>
</tr>
<tr>
<td>(Conducting the instructional Programme)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase III</td>
<td>• Problem solving Inventory (PSI)</td>
<td>• Problem solving Inventory (PSI)</td>
</tr>
<tr>
<td>(Administration of the Post-test)</td>
<td>• Critical Thinking Essay Test</td>
<td>• Critical Thinking Essay Test</td>
</tr>
<tr>
<td></td>
<td>• Pro-Environmental Behaviour Scale(PEBS)</td>
<td>• Pro-Environmental Behaviour Scale(PEBS)</td>
</tr>
</tbody>
</table>

6.12 Collection of Data

The data was collected by following strictly the design and procedure of the experiment. The data consisted of:

1. Pre-test and Post-test scores on Life Skills namely Problem Solving Skill and Critical Thinking Skill.
2. Pre-test and Post-test scores on Pro-Environmental Behaviour.
3. Pre-test scores on Psychological Hardiness.
4. Reduced scores pertaining to Problem Solving Life Skill and gain scores pertaining to Critical Thinking Life Skill, Pro-Environmental Behaviour along with its dimensions namely Green Consumer Behaviour, Waste Reduction Behaviour, Recycling and Reuse Behaviour, Conservation Behaviour and Lobbying Litigation and Administrative Intervention were taken for analysis.

6.13 Statistical Techniques

In the present study, Descriptive statistical techniques such as mean, median, standard deviation, skewness and kurtosis were worked out to ascertain the nature of distribution of reduced scores on the variable of Problem Solving Life Skill and gain scores on Critical Thinking Life Skill, Pro-Environmental Behaviour and its dimensions namely Green Consumer Behaviour, Waste Reduction Behaviour, Recycling and Reuse Behaviour, Conservation Behaviour and Lobbying Litigation and Administrative Intervention and independent variable of psychological hardiness of total sample, control group and experimental group.

To study the main effects and interaction effects of independent variables of Teaching Strategy and Psychological Hardiness on the dependent variables of life skills namely Problem Solving Skill and Critical Thinking Skill, Pro-Environmental Behaviour and its dimensions namely Green Consumer Behaviour, Waste Reduction Behaviour, Recycling and Reuse Behaviour, Conservation Behaviour and Lobbying Litigation and Administrative Intervention, statistical technique of two way (2x2) analysis of variance was used. For further investigation, t-test was employed, wherever F-value was found to be significant.

6.14 Conclusions

1. There was significant difference in the mean reduced scores of group taught through Experiential Learning Strategy and group taught through Traditional Teaching Strategy on the dependent variable of Problem Solving Skill. Students taught through Experiential Learning Strategy yielded significantly higher mean reduced scores than students taught through Traditional Teaching Strategy.

2. There was significant difference in the mean reduced scores on the Problem Solving Skill between groups with High Psychological Hardiness and Low Psychological Hardiness.
Psychological Hardiness. High Hardy group (HH) yielded significantly higher mean reduced score on Problem Solving Life Skill than Low Hardy group (LH).

3. There was significant interaction found between instructional strategy and Psychological Hardiness on the Problem Solving Life Skill. Further investigations revealed that:

- There was no significant difference between mean reduced scores of High Hardy group taught by Experiential Learning Strategy and Low Hardy group taught by Experiential Learning Strategy on Problem Solving Life Skill.

- High Hardy group taught through Traditional Teaching Strategy developed significantly higher on Problem Solving Skill than that of Low Hardy group taught through Traditional Teaching Strategy.

- There was no significant difference between mean reduced scores of High Hardy group taught through Experiential Learning Strategy and High Hardy group taught through Traditional Teaching Strategy on Problem Solving Life Skill.

- Low Hardy group taught through Experiential Learning Strategy developed significantly higher on Problem Solving Skill than that of Low Hardy group taught through Traditional Teaching Strategy.

- High Hardy group taught through Experiential Learning Strategy developed significantly higher Problem Solving Skill than that of Low Hardy group taught through Traditional Teaching Strategy.

- There was no significant difference found between mean reduced scores of Low Hardy group taught through Experiential Learning Strategy and High Hardy group taught through Traditional Teaching Strategy on Problem Solving Life Skill.

4. There was significant difference in the mean gain scores of group taught through Experiential Learning Strategy and group taught through Traditional Teaching Strategy on the dependent variable of Critical Thinking Skill. Students taught through Experiential Learning Strategy yielded significantly higher mean gain scores than students taught through Traditional Teaching Strategy.
5. There was no significant difference found in the mean gain scores on the Critical Thinking Skill between groups with High Psychological Hardiness and Low Psychological Hardiness.

6. There was no significant interaction found between instructional strategy and Psychological Hardiness on the Critical Thinking Skill.

7. There was significant difference in the mean gain scores of experimental group taught with Experiential Learning Strategy and control group taught with Traditional Teaching Strategy on the dependent variable of Pro-Environmental Behaviour. Students taught through Experiential Learning Strategy yielded significantly higher mean gain scores than students taught through Traditional Teaching Strategy.

8. There was significant difference in the mean gain scores on the dependent variable of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness. High Hardy group (HH) yielded significantly higher mean gain score on the variable of Pro-Environmental Behaviour than Low Hardy group (LH).

9. There was no significant interaction found between instructional strategy and Psychological Hardiness on the dependent variable of Pro-Environmental Behaviour.

10. There was significant difference found in the mean gain scores of experimental group taught through Experiential Learning Strategy and control group taught through Traditional Teaching Strategy on the dependent variable of Green Consumer Behaviour dimension of Pro-Environmental Behaviour. Students taught through Experiential Learning Strategy yielded significantly higher mean gain scores than students taught through Traditional Teaching Strategy.

11. There was significant difference found in the mean gain scores on the dependent variable of Green Consumer Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness. High Hardy group (HH) yielded significantly higher mean gain scores on the variable of Green Consumer Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group (LH).
12. There was significant interaction found between instructional strategy and Psychological Hardiness on the Green Consumer Behaviour dimension of Pro-Environmental Behaviour. Further investigations revealed that:

- High Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Green Consumer Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught through Experiential Learning Strategy.

- High Hardy group taught through Traditional Teaching Strategy reported significantly higher gain on Green Consumer Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught by Traditional Teaching Strategy.

- There was no significant difference between mean gain scores on Green Consumer Behaviour dimension of Pro-Environmental Behaviour of High Hardy group taught through Experiential Learning Strategy and High Hardy group taught through Traditional Teaching Strategy.

- Low Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Green Consumer Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught through Traditional Strategy.

- High Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Green Consumer Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught through Traditional Teaching Strategy.

- There was no significant difference between mean gain scores on Green Consumer Behaviour dimension of Pro-Environmental Behaviour of Low Hardy group taught through Experiential Learning Strategy and High Hardy group taught through Traditional Teaching Strategy.

13. There was significant difference found in the mean gain scores of group taught through Experiential Learning Strategy and the group taught through Traditional Teaching Strategy on the dependent variable of Waste Reduction Behaviour. Students taught through Experiential Learning Strategy yielded significantly
higher mean gain scores than students taught through Traditional Teaching Strategy.

14. There was no significant difference found in the mean gain scores on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

15. There was significant interaction found between instructional strategy and Psychological Hardiness on the Waste Reduction Behaviour dimension of Pro-Environmental Behaviour. Further investigations revealed that:

- High Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught through Experiential Learning Strategy.

- There was no significant difference found between mean gain scores of High Hardy and Low Hardy group taught through Traditional Teaching Strategy on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour.

- High Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour than High Hardy group taught through Traditional Teaching Strategy.

- Low Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught through Traditional Teaching Strategy.

- High Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group taught through Traditional Teaching Strategy.

- Low Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Waste Reduction Behaviour dimension of Pro-Environmental Behaviour than High Hardy group taught through Traditional Teaching Strategy.
16. There was significant difference found in the mean gain scores of the group taught with Experiential Learning Strategy and the group taught with Traditional Teaching Strategy on the dependent variable of Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour. Students taught through Experiential Learning Strategy yielded significantly higher mean gain scores than students taught through Traditional Teaching Strategy.

17. There was significant difference in the mean gain scores on Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and group with Low Psychological Hardiness. High Hardy group (HH) yielded significantly higher mean gain scores on the variable of Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour than Low Hardy group (LH).

18. There was no significant interaction found between instructional strategy and Psychological Hardiness on the Recycling and Reuse Behaviour dimension of Pro-Environmental Behaviour.

19. There was significant difference found in the mean gain scores of the group taught through Experiential Learning Strategy from the group taught through Traditional Teaching Strategy on the dependent variable of Conservation Behaviour dimension of Pro-Environmental Behaviour. Students taught through Experiential Learning Strategy yielded significantly higher mean gain scores than students taught through Traditional Teaching Strategy.

20. There was no significant difference found in the mean gain scores on Conservation Behaviour dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

21. There was no significant interaction found between instructional strategy and Psychological Hardiness on the Conservation Behaviour dimension of Pro-Environmental Behaviour.

22. There was significant difference found in the mean gain scores of group taught with Experiential Learning Strategy and the group taught with Traditional Teaching Strategy on the dependent variable of Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour. Students taught through Experiential Learning Strategy yielded significantly
higher mean gain scores than students taught through Traditional Teaching Strategy.

23. There was no significant difference found in the mean gain scores on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour between groups with High Psychological Hardiness and Low Psychological Hardiness.

24. There was significant interaction found between instructional strategy and Psychological Hardiness on the Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour. Further investigations revealed that:

- There was no significant difference found between mean gain scores on dimension of Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour of High Hardy group taught through Experiential Learning Strategy and Low Hardy group taught through Experiential Learning Strategy.

- There was no significant difference found between mean gain scores of High Hardy and Low Hardy group taught through Traditional Teaching Strategy on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour.

- There was no significant difference found between mean gain scores on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour of High Hardy group taught through Experiential Learning Strategy and High Hardy group taught through Traditional Teaching Strategy.

- Low Hardy group taught through Experiential Learning Strategy has reported significantly higher gain on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour than Low Hardy group taught through Traditional Teaching Strategy.

- There was no significant difference found between mean gain scores of High Hardy group taught by Experiential Learning Strategy and Low Hardy group taught through Traditional Teaching Strategy on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour.
• Low Hardy group taught through Experiential Learning Strategy reported significantly higher gain on Lobbying Litigation and Administrative Intervention dimension of Pro-Environmental Behaviour than High Hardy group taught through Traditional Teaching Strategy.

6.15 Educational Implications

Environmental problems such as air and water pollution, urban garbage and climate changes in urban areas are the results of human behaviour. Only change in human behaviour can reduce these environmental problems. Thus studying attitude and behaviour of people is a precondition to change this situation.

Today adolescents are living in a more complex world, which has resulted in increased stress. They need to have a number of skills to function as individuals and as members of social groups. Effective acquisition of life skills can influence the way adolescents cope with stress and face the challenges present in their lives. Life skills are abilities that facilitate to analyze society and everyday life critically in order to understand the sources of environmental problems, and to find and work for solutions to problems at both the individual and societal level. Experiential Learning brings behaviour modification and offers opportunities for autonomy and critical analysis. Experiential Learning with due stress on practical activities and first hand experiences engages learners in multiple perspectives inherent in environmental issues and provides experience in using investigative, critical thinking, and problem solving skills in solving environmental problems. Learners practice various skills to find solutions and in this process they feel that they can also be effective in bringing desirable change as responsible citizenry. Thus Experiential Environmental Education lays the foundation for developing life skills and pro-environmental behaviours. A closer look into conclusions of present study suggests the following educational implications of the study.

• Students taught through Experiential Learning Strategy yielded significantly more gain scores on Problem Solving Life Skill and Critical Thinking Life Skill in the present study as compared to the students taught through Traditional Teaching Strategy. This result indicates that Experiential Learning holds great potential in enhancing Problem Solving and Critical Thinking Life Skills of students, if they are instructed through activity based plans providing them the opportunities to
work collaboratively. So, this finding lays emphasis on providing direct and hands-on experiences to students while teaching environmental education.

A teacher should organize and facilitate direct experiences to engage students in problem solving and critical thinking processes under the assumption that this will lead to meaningful and long-lasting learning. He should design experiences carefully, execute safely and process thoughtfully in order to enhance problem solving and critical thinking skills of his/her students. He should also evaluate learning outcomes. Hence a teacher should undergo preparatory and reflective exercises to prepare his students as effective problem solvers and critical thinkers. Such a teacher will develop these skills in students not only for their student life but also in their future lives also. Problem solving and critical thinking skills thus developed will have cross discipline transferability and students can apply these skills in other disciplines. It will help students in improving their scores in the subjects like Science, Mathematics, Arts and languages etc.

Teacher educators should also provide training to prospective teachers in experiential techniques which target life skills. This finding offers implication for researchers to evaluate the effectiveness of existing methods and evolve experiential methods more potent in developing life skills in students.

NGOs can also involve students in community environmental problem solving, thereby providing them opportunities to practice these skills. Curriculum planners should include more locally relevant and inexpensive activities with clear-cut guidelines to teachers on their part as planner, executer and evaluator.

This finding has implications for school administrators/principals to provide adequate funds and much desired flexibility in the time table so that educators do not face any difficulty in adopting experiential learning strategy for teaching environmental education. Further, there is emphasis on the evaluation of performance of secondary school students on the basis of life skills in Continuous Comprehensive Evaluation scheme proposed by CBSE and currently being followed by Government schools. Hence schools should lay more emphasis on adopting experiential learning strategy as it targets various life skill/s depending on the method/s used. This will in turn contribute towards improving life skills and raising academic achievements of their students according to new policy.
The present study reveals that group taught through Experiential Learning Strategy yielded significantly higher mean gain scores on the dependent variables of Pro-Environmental Behaviour and its dimensions namely Green Consumer Behaviour, Waste Reduction Behaviour, Recycling and Reuse Behaviour, Conservation Behaviour and Lobbying Litigation and Administrative Intervention as compared to group taught through Traditional Teaching Strategy. This finding offers manifold implications for educators/teachers, teacher educators, NGO’s, researchers working in area of Environmental Education and curriculum framers to facilitate experiential learning.

A teacher should engage students in experiential learning in Environmental Education so that the abstract quickly becomes real through immediate examples. Teacher should provide students’ opportunities for collaborative learning by means of various group activities. Teacher should also get training to use environmental education techniques such as storytelling, games, case studies, and role-playing etc. while working in school settings. Teacher should provide opportunities to students to practice interpersonal and communication skills including oral and written communication by involving students in writing reports and letters, oral and written debates about environmental issues, policies and laws. It will increase their confidence and self esteem and they will get knowledge about environmental laws, various international initiatives and steps taken by government and NGOs to conserve environment. They will join hands and will undertake forms of environmental activism such as Lobbying Litigation and Administrative Intervention to save this beautiful planet Earth as students and in their future lives. Teacher educator should teach EE methodology to prospective teachers not only theoretically but he should also demonstrate various experiential techniques targeting pro-environmental behaviours.

These results hold implications for school administration also. There should be restructuring of school system such as flexibility in time-table, evaluation practises etc. to incorporate experiential methods in formal school setting.

NGOs and researchers engaged in area of Environmental Education should also enrich curriculum with effective activities undertaken by them to conserve environment. They should also share their experiences in the field with schools. Curriculum planners should lay much emphasis on developing activity oriented
curriculum in Environmental Education. Moreover students should be evaluated on the basis of their performance in various experiential learning projects and environment related activities. It will engender positive attitude of parents towards activities who otherwise consider these mere wastage of time.

- The result of present study that High Hardy group (HH) performed significantly better on the variable of Problem Solving Life Skill than Low Hardy group (LH) group, has significance for both educators and school counsellors.

Educators should try to take steps such as motivating and encouraging students and assigning responsibilities to them to develop psychological hardiness. It will help in enhancing their problem solving skills.

School Counsellors should also try to identify low hardy students and provide them guidance and support to increase hardiness so as they are able to understand and analyse problems and overcome obstacles in problem solving process.

- In the present study, High Hardy students (HH) had significantly higher mean gain scores on the variables of Pro- Environmental Behaviour along with its dimensions Green Consumer Behaviour and Recycling and Reuse Behaviour than Low Hardy students (LH). This finding offers implications for educators/teachers, school Counsellors, school authorities and educational administrators.

Educators should also keep in mind hardiness level of students and they should also have knowledge of methods to develop high psychological hardiness so that students do not consider environmental problems as stressors and resort to environmentally mindful actions. Educators also need to be proactive rather than reactive and take additional steps to prevent stressors and student depression. Besides this, longer term institutionalized support and effort should be provided to improve students’ hardiness.

School Counsellors should provide guidance and support to students to increase hardiness so that they do not consider environmental problems as stressors. They can help students to develop hardiness by training them in stress management and linking them to counselling resources using the websites.

Further, this result has implications for school authorities and educational administrators who should frame and implement rules and regulations to bring
requisite behavioural changes in low hardy students on these dimensions as their actions are controlled more by powerful others.

- In the present study, High Hardy and Low Hardy groups did not differ significantly on Critical Thinking Life Skill and Waste Reduction Behaviour, Conservation Behaviour and Lobbying Litigation and Administrative Intervention dimensions of Pro-Environmental Behaviour. This result may be due to fact that activities leading to critical thinking development and adoption of Waste Reduction Behaviour, Conservation Behaviour and Lobbying Litigation and Administrative Intervention, are integral part of school life of students. Moreover, students are evaluated on these variables now a days. The implication of this finding is that teachers should evaluate students on these variables irrespective of their hardiness and avoid logical error while rating students.

- Beyond the value of main effects involving experiential learning or psychological hardiness, an integrative model that encompasses their interaction effect may offer important implications for teachers/educators, school counselors and school administration. In present studies, there was significant interaction found between instructional strategies and Psychological Hardiness on the Problem Solving Skill and Green Consumer Behaviour, Waste Reduction Behaviour and Lobbying Litigation and Administrative Intervention dimensions of Pro-Environmental Behaviour.

These results offer implications for educators that they should give attention to interplay of cognitive factors regulated by experiential learning and psychological factors such as control, commitment and challenge for developing life skills and pro-environmental behaviour.

Teachers, principals and environmentalists can develop some perceptivity from interactive process of teaching strategies and psychological hardiness on the variables of Problem Solving Skill and Green Consumer Behaviour, Waste Reduction Behaviour and Lobbying Litigation and Administrative Intervention dimensions of Pro-Environmental Behaviour.

- There was no significant interaction found between instructional strategies and Psychological Hardiness on the Critical Thinking Life Skill and Pro-
Environmental Behaviour with its dimensions namely Recycling and Reuse Behaviour and Conservation Behaviour.

Teachers, principals and environmentalists can have some suggestive penetration into these interactive processes of teaching strategies and psychological hardiness on Critical Thinking Life Skill and Pro-Environmental Behaviour and its dimensions namely Recycling and Reuse Behaviour and Conservation Behaviour while helping the students in solving environmental problems.

The role of education is not only to provide information but it also has to engender values. Experiential approaches enable adolescents to practice citizenship, critical thinking and group communication skills through activities. These strategies, if adopted in schools, will promote skill building and pave the way for effective citizenship in complex world. As part of an overall educational development program, experiential approaches in environmental education will play an important role in preparing key individuals i.e., adolescents in protecting and improving the environment by emphasizing skill training. Students will continue to use these skills in their future work and throughout their lives.

6.16 Suggestions for the Further Research

The present study was limited with respect to sample studied, factors controlled, tools and techniques employed and the statistical operations carried out. These limitations necessitate conducting a series of research projects in the area of research covered by the study. The following are the suggestions for the further research:

- The present investigation was based only on secondary school students. It can be conducted at different educational levels like Primary level, College level and at University level.

- This study may be extended to give representation to all type of schools, i.e., convent schools, public schools or schools under rural areas.

- The present study was based on quantitative measurement as mean gain scores on selected life skills and different environmental behaviours in experimental design led to conclusions. Qualitative evaluation of life skills (Problem Solving Skill, Critical Thinking Skill) and Pro-Environmental Behaviour and its dimensions can also be carried out as it will permit the evaluator to study selected issues and events in more depth and detail.
• Effect of control, commitment and challenge (dimensions of hardiness) on life skills and pro-environmental behaviour can be studied separately as some researchers indicate that hardiness is multidimensional rather than a unitary phenomenon.

• Effect of experiential learning in EE as correlate of psychological hardiness can also be studied on environmental knowledge, sensitivity and attitudes.

• Present study involved hand-on-activities in school science laboratory, school garden and grounds, Community Park and viewing power point presentations etc. Future Research studies can also include activities like hiking in open space, exploring more eco-systems, watching nature scenes on TV.

• Present study involved effect of experiential learning on selected life skills of problem solving and critical thinking only. Effect of experiential learning on other life skills like decision making, coping and self management skills, communication skills etc can also be studied.

• The higher level thinking skills such as problem solving and critical thinking in this research work were transferred strictly in environmental context not cross discipline. There is a need to demonstrate transferability of these skills into all curricular areas in future research.

• Effect of experiential learning on life skills and pro-environmental behaviour can also be studied in relation to other variables like age, gender, income, education, problem-based knowledge, environmental legislation, environmental attitude, feeling of stress and preparedness to act.

• Effects of using experiential learning on the academic achievement of students in subjects such as Mathematics, Languages, Arts and Social Studies can also be studied in relation to psychological hardiness.

• A comparative study may be designed to compare the effect of experiential learning on life kills and PEB of the individuals who have adopted anthropocentric views of the environment and individuals who have adopted bio-centric views of the environment.