Chapter I

Introduction 1

1.1 Design Education 1
1.1.1 Craft and design 3
1.1.2 Design 4
1.1.3 Training of the designer 5
1.1.3.1 Artists' Guilds 5
1.1.3.2 The academies 5
1.1.3.3 The Bauhaus approach 6
1.1.3.4 Elements and principles approach 9
1.1.3.5 Institute of design approach 10
1.1.3.6 The unstructured approach 10
1.1.3.7 Today's approach 10
1.1.3.8 Constructivism 11
1.1.3.9 Principles of learning 13

1.2 Design education in India 16

1.3 Need for color and form studies in Design Education 18

1.4 Color and Form: How we see objects 20

1.5 Color Theory 21
1.5.1 Color wheel 21
1.5.2 Primary colors 21
1.5.3 Secondary colors 21
1.5.4 Tertiary colors 21
1.5.5 Color harmony 22
Chapter II

Review of Related Studies

2.1 Introduction
2.2 Studies related to design Education
2.3 Educational research
2.4 Studies related to Visual Communication
2.5 Studies related to color and form
2.5.1 Aesthetic aspects of Color and form
2.5.2 Studies related to aspects of Color and Physics
2.6 Implications of the review of related studies for the present study
## Chapter III

### Methodology

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.</td>
<td>Introduction</td>
<td>69</td>
</tr>
<tr>
<td>3.2</td>
<td>The Design of Research</td>
<td>70</td>
</tr>
<tr>
<td>3.3</td>
<td>Sample of the study</td>
<td>70</td>
</tr>
<tr>
<td>3.4</td>
<td>Tools used for the study</td>
<td>74</td>
</tr>
<tr>
<td>3.5</td>
<td>Procedure of the study</td>
<td>76</td>
</tr>
<tr>
<td>3.5.1</td>
<td>Assessment of students prior to intervention</td>
<td>77</td>
</tr>
<tr>
<td>3.5.2</td>
<td>Development of the Instructional Strategy</td>
<td>78</td>
</tr>
<tr>
<td>3.5.3</td>
<td>Implementation</td>
<td>79</td>
</tr>
<tr>
<td>3.5.4</td>
<td>Post intervention Assessment of students</td>
<td>79</td>
</tr>
<tr>
<td>3.6</td>
<td>Data Analysis</td>
<td>80</td>
</tr>
</tbody>
</table>

## Chapter IV

### Materials developed for teaching the course on color and form

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Introduction</td>
<td>82</td>
</tr>
<tr>
<td>4.2</td>
<td>Instructional pattern at NID</td>
<td>83</td>
</tr>
<tr>
<td>4.2.1</td>
<td>NID’s evaluation system</td>
<td>84</td>
</tr>
<tr>
<td>4.3</td>
<td>Course Content</td>
<td>86</td>
</tr>
<tr>
<td>4.3.1</td>
<td>Earlier Course Contents for the course Color and Form</td>
<td>87</td>
</tr>
<tr>
<td>4.3.2</td>
<td>Content for the course on Color and Form and the Evaluation Criteria developed by the investigator</td>
<td>88</td>
</tr>
</tbody>
</table>
4.3.3 The major changes introduced by the investigator 90

4.4 Pre Intervention Assignment 91
4.4.1 The assignment 91
4.4.2 The questionnaire 92

4.5 Intervention 92
4.5.1 Session I 93
4.5.1.1 Learning Objectives 93
4.5.1.2 Instructional strategies employed 93
4.5.1.3 Procedure 93
4.5.1.3.1 Physics of color and light 94
4.5.1.3.2 Basic color theories 97
4.5.1.3.3 Primary colors 97
4.5.1.3.4 Subtractive color and additive color 98
4.5.1.3.5 Harmonious colors 100
4.5.1.3.6 Complimentary colors 100
4.5.1.3.7 Analogous colors 100
4.5.1.3.8 Warm Colors 100
4.5.1.3.9 Color Wheel 101
4.5.1.3.10 Relative proportions of color 102
4.5.1.3.11 Hue, intensity and value 103
4.5.1.3.12 Complimentary colors and its degree of neutralization 104
4.5.1.3.13 Color sphere 105
4.5.1.3.14 Color star 106
4.5.1.4 The assignments 107

4.5.2 Session II 108
4.5.2.1 Learning Objectives of this session were 108
4.5.2.2 Instructional strategies employed 108
4.5.2.3 Procedure 109
4.5.2.3.1 Contrast of hue 110
4.5.2.3.2 Light and dark contrast 111
4.5.2.3.3 Cold warm contrast 111
4.5.2.3.4 Complimentary contrast 112
4.5.2.3.5 Simultaneous contrast 113
4.5.2.3.6 Contrast of Saturation 114
4.5.2.3.7 Contrast of Extension 114
4.5.2.4 The assignments 115
4.5.2.5 Criteria of evaluation 116

4.5.3. Session III 117
4.5.3.1 Learning Objective 117
4.5.3.2 Instructional strategies employed 117
4.5.3.3 Procedure 121
4.5.3.4 Assignments 121

4.5.4. Session IV 123
4.5.4.1 Learning objective 124
4.5.4.2 Instructional strategies employed 124
4.5.4.3 The procedure 124
4.5.4.4 Assignment 125
4.5.4.5 Criteria for evaluation 125

4.5.5. Session V 126
4.5.5.1 Learning objective 126
4.5.5.2 Instructional strategies employed 126
4.5.5.3 Procedure 126
4.5.5.4 Assignments 127

4.5.6. Post Intervention Assignment 128
### Chapter 5

Data Analysis Interpretation and Discussion

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Introduction</td>
<td>129</td>
</tr>
<tr>
<td>5.2</td>
<td>Pre-Intervention Assessment of students</td>
<td>130</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Student 1</td>
<td>130</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Student 2</td>
<td>132</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Student 3</td>
<td>134</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Student 4</td>
<td>135</td>
</tr>
<tr>
<td>5.2.5</td>
<td>Student 5</td>
<td>137</td>
</tr>
<tr>
<td>5.2.6</td>
<td>Student 6</td>
<td>139</td>
</tr>
<tr>
<td>5.2.7</td>
<td>Student 7</td>
<td>141</td>
</tr>
<tr>
<td>5.2.8</td>
<td>Student 8</td>
<td>142</td>
</tr>
<tr>
<td>5.2.9</td>
<td>Student 9</td>
<td>144</td>
</tr>
<tr>
<td>5.2.10</td>
<td>Student 10</td>
<td>145</td>
</tr>
<tr>
<td>5.2.11</td>
<td>Student 11</td>
<td>147</td>
</tr>
<tr>
<td>5.2.12</td>
<td>Student 12</td>
<td>148</td>
</tr>
<tr>
<td>5.2.13</td>
<td>Analysis and Interpretation of pre intervention data</td>
<td>150</td>
</tr>
<tr>
<td>5.3</td>
<td>Post Intervention assessment of students</td>
<td>152</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Student 1</td>
<td>153</td>
</tr>
</tbody>
</table>
5.3.2 Student 2 154
5.3.3 Student 3 155
5.3.4 Student 4 156
5.3.5 Student 5 157
5.3.6 Student 6 158
5.3.7 Student 7 159
5.3.8 Student 8 161
5.3.9 Student 9 162
5.3.10 Student 10 163
5.3.11 Student 11 164
5.3.12 Student 12 165
5.3.13 Interpretation post intervention test data 166
5.3.14 Grades obtained by the students on the course 166

5.4 Interpretation and Discussion of results 187
5.4.1 Student 1 187
5.4.2 Student 2 188
5.4.3 Student 3 190
5.4.4 Student 4 191
5.4.5 Student 5 193
5.4.6 Student 6 194
5.4.7 Student 7 196
5.4.8 Student 8 197
5.4.9 Student 9 198
5.4.10 Student 10 200
5.4.11 Student 11 201
Chapter 6

Summary, Findings and Conclusions

6.1 Introduction

6.1.1 Design Education

6.1.1.1 Design

6.1.1.2 Training of the designer

6.1.1.3 Constructivism

6.1.1.4 Principles of learning

6.1.2 Color and Form: How we see objects

6.1.2.1 Color Theory

6.1.3 Importance of color and form; what brain sees

6.1.4 Need for color and form studies in Design Education

6.1.5 Color and culture

6.1.6 Color, Gender and psychology

6.1.7 Color and geography

6.1.8 Color Context

6.1.9 Associated meanings

6.1.10 Importance of preparing an instructional strategy for learning about color

6.2 Rationale of the study

6.3 Research Questions

6.4 Problem statement

6.5 Objectives of the Study
6.6 Operational definitions of terms used 224
6.7 Limitations of the study 225
6.8 Methodology of the study 225
6.8.1 Design of Research 225
6.8.2 Tools used for the study 225
6.8.3 Sample of the Study 226
6.9 Procedure of the study 227
6.9.1 Assessment of students prior to intervention 227
6.9.2 Development of the instructional strategy 227
6.9.3 Implementation 227
6.9.4 Post intervention assessment of students 228
6.10 Data Analysis 228
6.11 Findings 229
6.12 Conclusion 232
6.13 Implications 233
6.14 Suggestions for further Research 234

References 236
List of Figures 242
Appendices 245
1. Questionnaire 245
2. Contents of the C.D. submitted along with the Thesis 247