Efficacy Testing of Tie and Dye Booklet

Rajdeep Kaur* and Sandeep Bains**

Tie and dye, is a resist-dyeing process for creating attractive coloured designs on fabrics. This is achieved by knotting, binding, folding or sewing certain parts of the cloth in such a way that the dye cannot penetrate into these areas when the cloth is dyed. It is a hand process by which intricate and attractive patterns can be produced. It is a village craft carried on mostly by women in villages of India. The workers are known as Bandhanaris who grow their nails of thumbs or fore fingers for tying the knots on cloth. Designs can be tied in different ways. A booklet on the tie and dye was prepared to inculcate the art among the art lovers. Further the efficacy of the booklet was tested on 80 students of Government schools (40 urban and 40 rural schools) of Ludhiana district. Pre knowledge testing and post knowledge testing was done. During pre-knowledge testing, it was found that there was a high knowledge gap which reached up to 2.00 WMS. Both rural and urban respondents had 100% knowledge gap in marking design on fabric, technique of random texturing, type of dye, pretreatment of fabric, preparation of dye bath and use of combination of various techniques. During post knowledge testing, the respondents were again administered the same questionnaire to check their knowledge level regarding tie and dye. It was found that the mean knowledge score of the respondents was high. It ranged between 1.75 to 2.00 WMS, which led to negligible knowledge gap. The knowledge gap clearly shows the effectiveness/efficacy of the booklet. The booklet was found to be efficient for learning techniques of tying.

[Keywords : Dye, Knowledge, Technique, Tie, Test]

1. Introduction

Tie and dye is a modern term invented in the mid 1960s in the United States but recorded in writing in an earlier form in 1941 as tied-and-dyed and in 1909 as
tied and dyed by Charles E. Pellew, for a set of ancient resist dyeing techniques, and for the products of these processes (Ebert, 2013). The tie and dye or bandhani textiles have had a continuous history in India, as shown by their recurrence in written and visual documents at intervals over the centuries particularly from the 12th century onwards. It is difficult to trace the origins of this craft to any particular area in India. According to some references it first developed in Jaipur in the form of leheriya. But it is widely believed that it was brought to Kutch from Sindh by Muslim Khatris who are still the largest community involved in the craft. Bandhani was introduced in Jamnagar. This city has now become one of the principal centers of bandhani, creating new patterns and experimenting with colours. A bandhani garment was considered auspicious with Leheriya design which is a popular tie and dye design for the bride. One also finds the maids in the Ajanta wall paintings created almost 1500 years ago, wearing blouses of tie and dye patterns.

The African, Indian, and Japanese words, adire, bandhana, and shibori, meaning to tie and dye, have been used for centuries. In this procedure the cloth is tied with a thread of thickness greater than that of the cloth. This process typically consists of folding, twisting, pleating, or crumpling fabric or a garment and binding with string or rubber bands, followed by application of dye(s). After the tied cloth is dyed and dried, the ties and knots are opened. As a result, different colourful patterns on the cloth are produced. The art of tie and dye is most popular in various regions of Gujarat, Kathiawar and Rajasthan. It is often used for T-shirts, dresses, skirts, and other garments and also in furnishings like pillow covers, table cloths, bed sheets etc.

The manipulations of the fabric prior to application of dye are called resists, as they partially or completely prevent the applied dye from colouring the fabric. More sophisticated tie-dyes involve additional steps, including an initial application of dye prior to the resist, multiple sequential dye and resist steps, and the use of other types of resists (stitching, stencils) and discharge. Unlike regular resist-dyeing techniques, tie-dye is characterized by the use of bright, saturated primary colours and bold patterns. These patterns, including the spiral, mandala, and peace sign, and the use of multiple bold colours, have become clichéd since the peak popularity of tie-dye in the 1960s and 1970s. The vast majority of currently produced tie-dyes use these designs, and many are mass produced for wholesale production. However, a new interest in more sophisticated tie-dye is emerging in the fashion industry, characterized by simple motifs, monochromatic colour schemes, and a focus on fashionable garments and fabrics other than cotton. Tie and dye is a village craft carried on mostly by women in villages of India. Designs can be tied in different ways. They are set in stylized floral pattern or motifs of lotus flowers, dancing women and elephants or smart geometrical patterns.
2. **The Present Study**

Learning this art requires practical knowledge. Demonstrations, lectures, group discussions etc can be useful. Booklets, if appropriately prepared, can also be used to train many concepts to different groups of people. Studies are available on using one of these methods or comparing them with other training methods in teaching a variety of issues on the effectiveness of these teaching methods. However, an effort has been made to develop booklet in a way, which imparts sufficient knowledge to the reader as well as the pictorial presentations make the reader easy to grasp the idea. This study intends to test the efficacy of prepared booklet on Tie and Dye. To evaluate how well a booklet communicates information is to ask a number of students to read the booklet and then test these students on the contents of the booklet.

3. **Methodology**

The purpose of this study was to determine the understanding level of the respondents. Pre and post knowledge testing about tie and dye among grade 8th and 10th students was done. A questionnaire was developed for this purpose. Before building the questionnaire, the booklet was carefully read and all discrete facts, concepts and the implications suggested for them, were listed. These units of information were then cast in the form of question answers.

These tests were developed to assess information, acquisition and retention of knowledge by the respondents. The efficacy of the booklet was tested on 80 students of two government schools, one urban and one rural which were selected for the study. Within each school, students were randomly selected to serve as subjects. Pre testing of the respondents was done. The students were given the booklet and had one week to get familiarized with concept and techniques of tie and dye. After reading each respondent was asked to prepare sample of size 10x10 inches in three colours using different techniques listed in the booklet. During post testing, they were then given the questionnaire and were asked to complete it in 30 minutes.

4. **Results and Discussion**

4.1 **Socio-economic Profile of the Respondents**

The data in table-1 indicates that nearly half (55%) of the rural respondents were from the age group of 11-13 years, while majority (70%) of the urban respondents were from age group of 14-16 years. Only 5 per cent of the urban respondents were above 17 years of age. All the respondents were females from both the schools. Equal number of respondents were taken from class VIII and X from both rural and urban schools who opted for craft/Home Science as a vocational course. The data pertaining to the grades of the students in Crafts/ Home Science...
showed that majority (92.5% and 95% of rural and urban respondents respectively) scored ‘A’ grade, while the rest scored ‘B’ grade in the subject. Further it was found that 90% of the rural respondents’ fathers and 85% of the urban respondents’ fathers were skilled workers, while the rest were either in service or business. Looking into the job profile of the respondents’ mothers, it was observed that majority (75% rural and 80% urban) of them were housewives, while 20 per cent of rural and 10 per cent of urban respondents’ mothers were engaged in unskilled work at their nearby localities. Only 5% rural and 10% urban respondents’ mothers were in service. The annual family income of all the respondents was the maximum of Rs one lakh per annum. It was also noticed that the students preferred painting, dancing, singing, watching TV as their hobbies. The interest in painting showed their inclination towards this art.

Table-1 : Socio economic characteristics of the respondents  
n=80

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>No. of Respondents</th>
<th>Rural (40)</th>
<th>Urban (40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-13 yrs</td>
<td>22</td>
<td>55</td>
<td>10</td>
</tr>
<tr>
<td>14-16 yrs</td>
<td>18</td>
<td>45</td>
<td>28</td>
</tr>
<tr>
<td>17 yrs and above</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
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</tr>
<tr>
<td>Female</td>
<td>40</td>
<td>100</td>
<td>40</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIII class</td>
<td>20</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>X class</td>
<td>20</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Marks in craft/ HSc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A grade</td>
<td>37</td>
<td>92.5</td>
<td>38</td>
</tr>
<tr>
<td>B grade</td>
<td>3</td>
<td>7.5</td>
<td>2</td>
</tr>
<tr>
<td>Father’s occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Business</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Skilled worker</td>
<td>36</td>
<td>90</td>
<td>34</td>
</tr>
<tr>
<td>Mother’s occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Housewife</td>
<td>30</td>
<td>75</td>
<td>32</td>
</tr>
<tr>
<td>Unskilled worker</td>
<td>8</td>
<td>20</td>
<td>4</td>
</tr>
</tbody>
</table>
4.2 Pre-knowledge Testing of Respondents

The knowledge level of respondents in tie and dye was tested through an interview schedule. During the pretest the respondents provided correct answers, for only a few of the questions relating to the fabric to be used for tie and dye. Table-2 reveals that there was a high knowledge gap which reached up to WMS of 2.00. Both rural and urban respondents had 100% knowledge gap in marking design on fabric, technique of random texturing, type of dye, pretreatment of fabric, preparation of dye bath and use of combination of various techniques. They had high knowledge gap ranging between WMS 1.53 to 1.97 regarding colour combinations, number of colours to be used in one product, material required for tying, steps of tie and dye, techniques of folding fabric, pleating, knotting, tritik, ingredients used for dyeing, procedure of dyeing, precautions while dyeing. The least knowledge gap was WMS 0.45 and 0.75 for the knowledge regarding the fabric to be used for tie and dye by rural and urban respondents respectively.

<table>
<thead>
<tr>
<th>Knowledge regarding different activities</th>
<th>Incorrect (0)</th>
<th>Partially correct (1)</th>
<th>Correct (2)</th>
<th>Mean knowledge score</th>
<th>Knowledge gap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
<td>Rural</td>
<td>Urban</td>
<td>Rural</td>
</tr>
<tr>
<td>Colour combinations</td>
<td>38</td>
<td>33</td>
<td>2</td>
<td>7</td>
<td>—</td>
</tr>
<tr>
<td>No of colours to be used in one product</td>
<td>37</td>
<td>36</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Fabric to be used</td>
<td>—</td>
<td>—</td>
<td>18</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>Material required for tying</td>
<td>36</td>
<td>39</td>
<td>4</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Marking design on fabric</td>
<td>40</td>
<td>40</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Steps of tie and dye</td>
<td>35</td>
<td>38</td>
<td>5</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Technique of folding fabric</td>
<td>38</td>
<td>39</td>
<td>2</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Technique of random texturing</td>
<td>40</td>
<td>40</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Technique of knotting</td>
<td>33</td>
<td>36</td>
<td>7</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>Technique of pleating</td>
<td>35</td>
<td>37</td>
<td>5</td>
<td>3</td>
<td>—</td>
</tr>
<tr>
<td>Technique of tritik</td>
<td>40</td>
<td>40</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Ingredients used for dyeing</td>
<td>30</td>
<td>29</td>
<td>9</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Type of dye</td>
<td>40</td>
<td>40</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
### 4.3 Post-knowledge Testing of Respondents

After providing booklets to all the respondents, the respondents were again administered the same questionnaire to check their knowledge level regarding tie and dye. Table-3 indicates that the mean knowledge score of the respondents was high. It ranged between WMS 1.75 to 2.00 leading to negligible knowledge gap. The knowledge gap clearly shows the effectiveness/efficacy of the booklet.

**Table-3 : Post-knowledge testing of respondents after getting booklets on Tie and Dye**

<table>
<thead>
<tr>
<th>Knowledge regarding different activities</th>
<th>Incorrect (0) Rural</th>
<th>Incorrect (0) Urban</th>
<th>Partially correct (1) Rural</th>
<th>Partially correct (1) Urban</th>
<th>Correct (2) Rural</th>
<th>Correct (2) Urban</th>
<th>Mean knowledge score Rural</th>
<th>Mean knowledge score Urban</th>
<th>Knowledge gap Rural</th>
<th>Knowledge gap Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour combinations</td>
<td>— —</td>
<td>— —</td>
<td>40 40</td>
<td>2.00 2.00</td>
<td>0.00 0.00</td>
<td>0.00 0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of colours to be used in one product</td>
<td>— —</td>
<td>1</td>
<td>39 40</td>
<td>1.95 2.00</td>
<td>0.05 0.00</td>
<td>0.00 0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fabric to be used</td>
<td>— —</td>
<td>— —</td>
<td>40 40</td>
<td>2.00 2.00</td>
<td>0.00 0.00</td>
<td>0.00 0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material required for tying</td>
<td>— —</td>
<td>2 1</td>
<td>38 39</td>
<td>1.95 1.97</td>
<td>0.05 0.03</td>
<td>0.05 0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marking design on fabric</td>
<td>— —</td>
<td>3 2</td>
<td>37 38</td>
<td>1.92 1.95</td>
<td>0.08 0.05</td>
<td>0.08 0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steps of tie and dye</td>
<td>— —</td>
<td>2 3</td>
<td>38 37</td>
<td>1.95 1.92</td>
<td>0.05 0.08</td>
<td>0.05 0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technique of folding fabric</td>
<td>— —</td>
<td>— —</td>
<td>40 40</td>
<td>2.00 2.00</td>
<td>0.00 0.00</td>
<td>0.00 0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technique of random texturing</td>
<td>— —</td>
<td>— 1</td>
<td>40 39</td>
<td>2.00 1.95</td>
<td>0.00 0.05</td>
<td>0.00 0.05</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technique of knotting</td>
<td>— —</td>
<td>— —</td>
<td>40 40</td>
<td>2.00 2.00</td>
<td>0.00 0.00</td>
<td>0.00 0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technique of pleating</td>
<td>— —</td>
<td>1 2</td>
<td>39 38</td>
<td>1.95 1.95</td>
<td>0.05 0.05</td>
<td>0.05 0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technique of triik</td>
<td>— —</td>
<td>11 7</td>
<td>29 33</td>
<td>1.75 1.82</td>
<td>0.25 0.18</td>
<td>0.25 0.18</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ingredients used for dyeing</td>
<td>— —</td>
<td>— 1</td>
<td>40 39</td>
<td>2.00 1.95</td>
<td>0.00 0.05</td>
<td>0.00 0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of dye</td>
<td>— —</td>
<td>— —</td>
<td>40 40</td>
<td>2.00 2.00</td>
<td>0.00 0.00</td>
<td>0.00 0.00</td>
<td></td>
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</tr>
</tbody>
</table>
Some respondents faced difficulty in some techniques of tie and dye which was recorded. Fig 1 shows the response of respondents for the difficulty level of the techniques of tie and dye. It is evident from the figure that even after the administration of the booklet, tritik technique was found to be the most difficult for the respondents.

![Fig.-1 : Difficulty level of the techniques](image)

MKS - Mean Knowledge Score, R - Rural, U - Urban

After learning the art of tie and dye respondents showed their interests in developing apparel and life style products. Seeing to their interests they were asked regarding articles which they can prepare using this technique. It was noticed that the respondents preferred preparing dupattas, suit, curtains, bed sheets, cushion covers, table covers, napkins by using the tie and dye technique.

5. Conclusion

Using the booklet greatly improved knowledge regarding tie and dye techniques, which remained high after the practical conduct. Education with the booklet was efficacious for teaching school students about tie and dye. It may tend to help in capacity building of the rural masses as it can be taken up as an enterprise, thus helping in financial upliftment.

References


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