Craft based assignments of undergraduate textile design students: Multiple case study

Umer Hameed,[1] National Textile University, Pakistan
Usman Hameed, Punjab University Lahore, Pakistan
Saima Umer, Punjab University Lahore, Pakistan

Abstract

Modern textile design education is based on skill and practice. To inculcate the required expertise, contemporary educators used craft-based assignments. Many designers and artists consider designing high-tech products to start with sketching and drawing, paper, and a pencil. The visualization of design is a broad idea. It involves the cognitive critical and technical thinking of the designer. The present study discussed different approaches to visualization and elucidation. Craft based assignment is the foundation of the design process, where undergraduate textile design students experienced design development. The present study is a multi-case study. Data were collected from three assignments in textile design education. It's a departmental case study where three cases were studies under the supervision of three textile design instructors. The outcomes demonstrated that, through craftsmanship training, the students found perception and explanation methods that were beforehand obscure to them and that they would not have thought of themselves. The study plan focused more on the thought and the outline sentiment than on the subtleties while applying the new strategies. The study shows that rough techniques seem to offer undergraduate textile design students a more robust visualization method and lower their creating threshold. The outcomes may be useful for teachers when planning craft projects that include a complete craft process that promotes undergraduate textile design students' own creativity and ideas. Through a well-planned craft project, it is possible to combine knowledge of different courses and promote essential skills in overall learning and education.

Keywords: Craft based textile, Textile Design process, Design education design experiment craft process content analysis

1. Introduction

National College of Arts Lahore Pakistan (NCA) has a long tradition of requiring craft as a compulsory course for every undergraduate textile design student. As early as the 1900s, NCA advocated the importance of craft for a complete education also discussed by Virtamaa (1980) in context of Scandinavian education. Today, craft is taught as a compulsory course at every level of education. Craft as a course consists of working with both soft (textile) and hard (wood, metal, etc.) materials.

[1] Corresponding Author: Umer Hameed, E #843, Nadirabad, Lahore Cantt , National Textile University, Faisalabad, 56000, Pakistan. email: umerhameeddtad@hotmail.com

In craft education craft is defined as containing the entire process from designing to producing the final outcome. No step in the process is seen as more important than another. However, in practice, either designing or producing may be emphasized and the work may concentrate more on one of these steps. For example, it may be essential to concentrate on producing to learn the skill of a particular craft technique, or designing may be the focus even to the extent that the final product is not produced at all. It is also possible that, if a teacher lacks the skills and ideas for teaching design, undergraduate textile design students are asked to use ready-made designs and models. The report on the evaluation of the course of craft in Textiles education shows that nearly half of the products produced in craft lessons are made from models introduced by the teacher. However, according to the national curriculum and the future needs of society , more emphasis should be placed on complete craft processes, i.e., processes that promote the use of undergraduate textile design students' own creativity and ideas, and not just pre-existing models.
Researchers agree that craft promotes various skills and has positive effects on undergraduate textile design students, both physically and psychologically (Garber 2002; Karppinen 2008; McLennan 2010; Huotilainen 2012). Making something by hand is constructive and empowering; craft enhances cognitive skills such as thinking and problem solving. It enhances bodily skills, fine motor coordination, hand–eye coordination and spatial conceptualization (Huotilainen 2012). Through craft, undergraduate textile design students gain positive experiences as they make artefacts with their own hands. What is more, craft- work advances skills in perseverance and group work. Theoretical and abstract phenomena of the surrounding environment may be brought into concrete practice through working with craft; it is also possible to combine knowledge of different courses and promote skills that are essential in overall learning and education.

A multidisciplinary approach and the integration of different courses has been debated and called for by authorities. The understanding of complete processes is enhanced when inte- grated teaching and learning is used (Anila 2009). However, Higher education Commission Pakistan (HEC) fragmented, and every design institution course is taught in its own lessons using course specific scheme of studies. This raises challenges for an undergraduate textile design student to perceive how the world fits together and how to understand entire processes instead of phenomenon separated from each other. Furthermore, there have been calls for the study of everyday phenomena of the surrounding world and topics that interest undergraduate textile design students (Anila 2009)

Sundass (2004) claim that meaningful and stimulating study modules increase students' motivation and improve learning results. They found that information is assimilated most profoundly in situations that are as close to real life as possible. Resolving real everyday problems makes learning more meaningful and improves learning. However, it seems that a lack of educational ideas diminishes integration in the design institution context.

This integration of everyday phenomena through craft-making can be explored in a number of ways. For example, the theme of using natural dyes was found to be a good way of integrating courses around phenomena that are familiar and interesting to teenagers, such as colors and textiles. It also offered a

platform of teaching certain topics mentioned in the national curriculum i.e. environmental issues and ecological values, materials, different separation techniques in chemistry, product design, and the cultural context of textiles and particular craft techniques. The curriculum of the Natural Dyes project contained the complete process from the collection of plants or fungi to the isolation, separation and characterization of pigments in chemistry, as well as from dyeing or printing with the pigment powder to designing and producing the craft product. At the end of the project, an exhibition was organized. It concretized the process and made the results visible to outsiders.

2. Research aim and methods

This article presents research from one part of the Natural Dyes project. It focuses on the design part of the project in order to discuss different approaches to visualization and elucidation. The two research questions are

What effect do the design process and the technique for elucidating an idea have on the final craft product?

What effect do the design process and the technique for elucidating an idea have on the undergraduate textile design students' conceptions of the designing and production process?

The data were collected from three design cases in textile craft courses taught by three teachers with one group of seven or eight undergraduate textile design students each. Each case introduces one visualization technique: watercolor painting connected to window framing, which resulted in the rug technique slippers; quick sketching with watercolors, which resulted in printed wall hangings; and collage by cutting or tearing shapes from colorful papers, which resulted in a set of printed bags. Each design case consisted of both designing and producing the final product. The research data of the design and visualization process consisted of the teachers' written lesson plans, notes of the researcher's observations in the classroom and videos recorded from the craft lessons (800 minutes, approximately 260 minutes per teacher). There was 6×90 minutes teaching periods for each group. Discursive interviews with the teachers were carried out on the themes connected to the teaching tasks. A structured questionnaire with a five-step Likert scale was completed by the undergraduate textile design students who took part in both chemistry and craft lessons (N=14). The questionnaire consisted of fifteen statements that undergraduate textile design students answered with a five-step agree–disagree scale. In addition, undergraduate textile design students' statements and other qualitative data were obtained from videos. A data-based, qualitative content analysis was performed of the interviews, lesson curriculums, notes of the classroom observations and videos. The analysis categories covered statements connected to design, product and integration.
The permission for this research and publication of the photos taken during the project has been obtained from the Design department and the guardians of the undergraduate textile design students involved in the project.

3. The Natural Dyes project and the three design cases

The Natural Dyes project was based on the multidisciplinary doctoral thesis 'Anthraquinones from the fungus Dermocybe sanguinea as textile dyes' by Räisänen (2002), in which simple methods were developed for the isolation and characterization of pigments from the fungi. The pigments were separated and analyzed by chemical means, after which the pigment powder was applied as dye for textile materials. Because the techniques used were simple and required little equipment, the idea of applying them at design institution in chemistry and craft lessons arose.

In cooperation with craft teacher education at the NCA, a public design institution in Pakistan, the Natural Dyes project was carried out three times within two years. Over 70 undergraduate textile design students participated in at least part of the project every design institution year. Some students were only part of the chemistry lessons (32, as two groups of sixteen undergraduate textile design students a year) or the craft lessons (32, as two groups of sixteen undergraduate textile design students a year), while some were in both (fourteen, as two groups of seven undergraduate textile design students in the first year and one group of seven undergraduate textile design students in the second year). Nearly half of the undergraduate textile design students were girls, and those who participated in the whole project, including both the chemistry and craft lessons, were all girls. Teachers, Khadija Hameed(Case 1), Tayab Subhani(Case 2) and Mubeen Ashraf(Case 3), laid out the visualization and elucidation ideas presented in this article. In each of the three design cases, the undergraduate textile design students were given the task to design and produce a particular craft object. The teacher introduced the idea of the object, but it was the task of the undergraduate textile design student to make his or her own design for the final product. The products were slippers, printed silk wall hangings produced as group work and bags, according to cases 1□3.

3.1.Case 1: Watercolor painting and window framing

In Case 1, the undergraduate textile design students were given the task to make slippers out of self-dyed yarn using a rug- making technique. The design for the covers of the slippers was accomplished using an aquarelle technique. Before the actual painting session, undergraduate textile design students were introduced to textile art accomplished with a rug-making technique and shown pictures of textile pieces. While watching, undergraduate textile design students were asked to describe their feelings about the particular art piece or the qualities or characteristics that the textile presented. These statements were recorded. The slide show and discussion took fourteen minutes. After that, undergraduate textile design students were encouraged to skim the pages of the books about Textiles rug culture and rug textile art. In the next stage, undergraduate textile design students took watercolors and were allowed to mix three to four colors that matched the previously self-dyed yarns. The teacher directed the undergraduate textile design students to paint freely on a sheet of A3 paper inspired by the expressions collected during the slide show; these expressions were shown on the whiteboard of the classroom. The undergraduate textile design students were encouraged to paint three different versions and try to accomplish them in a way that would 'feel like the undergraduate textile design student's own style' (T1). The teacher suggested that the undergraduate textile design students think about the paintings 'as surfaces' and she guided them towards more 'abstract composition'. She noted, 'Do not draw hearts' (T1). The painting session took 80 minutes.

When the paintings were finished, the design for the slip- per was chosen by searching for an interesting area in the painting with a window frame, a hole in a paper.

The covers of the slippers were completed with a rug-making technique for which aquarelle painting was a very applicable strategy for visualization because the blending of colors and forms was smooth. In the rug-making process, it was possible to blend several differently colored yarns to produce one knot and to obtain the preferred outcome. In the final rug surface, accurate forms were not delineated, but colors were blended together. After the pieces of the covers were accomplished, the slippers were sewn together and completed.

3.2.Case 2: Quick sketching with watercolor's

In Case 2, the undergraduate textile design students were asked to design and print silk materials to be wall hangings in the design institution hall. In the beginning, undergraduate textile design students were introduced to modern textile art by a ten-minute slide show. After that, undergraduate textile design students took a fifteen-minute tour in the design institution building to look for an appropriate place for the wall hangings. For the design, the undergraduate textile design students drew quick sketches of their dancing classmates with watercolors. The idea was to complete a figure quickly without thinking too much about the final appearance of the drawing. According to the teacher (T2), 'Watercolors make it impossible to draw in a too meticulous way. Drafts are supposed to be rough: great lines and simple forms are easier to work forward'. The teacher explained to the undergraduate textile design students why the drafts were made and why the shapes and forms were more important than the details. Undergraduate textile design students chose their favorite music. A group of undergraduate textile design students were dancing, and at the same time, members of the other group sketched their class- mates. The watercolors did not allow detailed drawing, and the short period, only several seconds, forced the drawings to be produced with no more than a few lines /The drawing session took 30 minutes.

After the sketching, the teacher explained to the undergraduate textile design students the principles of printing design, including the enlargement and reduction of the pattern, rhythm and composition. The undergraduate textile design students were divided into groups of three to four and they selected a few figures from their drawings to be made into stencils. Undergraduate textile design students were briefed on how to use copy machines for enlarging and they were reminded that difference in size increases tension and can be used to make the print more interesting. The stencils for printing were prepared by cutting the figure out of a transparency film laid over the drawing. The silk materials were dyed with natural dyes, after which the figures were printed using the stencils. The undergraduate textile design students prepared the printing pastes made of natural colorants.

3.3.Case 3: Collage: Cutting or tearing shapes from colored paper

In Case 3, the design for the textile printing was accomplished using a paper collage method. Teaching outside the classroom was included in this experiment; the inspiration for the shapes was obtained from Central Asian ikat coats that were part of an exhibition in a museum to which undergraduate textile design students made a 50-minute visit. In the museum, every undergraduate textile design student was given a

paper with four questions about the colors and forms of designs and patterns of the coats. Undergraduate textile design students were allowed to draw or write their answers. Afterwards, the undergraduate textile design students composed patterns for printing inspired by their excursion. They made a collage by tearing or cutting out shapes from colored paper. For printing, the undergraduate textile design students used such techniques as stencil, frame or tape-resist printing. At the end of the process, the printed fabrics were sewn into bags

4. Results and discussion

The research aim was to discover what effects the designing process and the technique for elucidating an idea had on the undergraduate textile design students' conception of the designing and producing process and on the final product. Here the results are presented and argued in relationship with the literature on the course.

4.1. Visualization as a part of the design and craft process

Visualization is an essential part of the craft designing process, because to ideate a novel product and to be able to discuss it with a teacher, an undergraduate textile design student must use some way of elucidation to show what he or she intends to make (Garner 2002). In particular, visualization assists in problem solving and handling diverse information (Seitamaa-Hakkarainen 2000: 172; Bilda et al. 2006). The importance of visualization was confirmed in this study. Classroom observations, teachers' statements on the video and the lesson plans showed that the teachers valued the designing and undergraduate textile design students' own ideas over any ready-made samples, because they felt that visualization was an important tool for communication and for them to understand the children's thoughts. As one teacher said, 'Otherwise I cannot know what you are thinking' (T1). The study showed further that the visualized design was also important for the undergraduate textile design students because it served as an instruction for them for the production process. The visualized design helped to concretize the way and order of working when using a particular craft technique (evident in all three Cases).

4.2.Communication through visualization

Bilda et al. (2006) noticed that students learn to develop their ideas through sketching, i.e. unfin- ished rather quick drawings or paintings made as a preliminary study. They emphasized that design education required an intensive learning process through drawing, and thus it was important to learn how to think with sketches. When students learn how to sketch, they also learn how to develop ideas. Bilda et al. described sketching as a dialogue in which drawing is used to test and evaluate ideas. Some designers describe sketching as a language that is used to externalize a mental image, the idea and, like language, sketching can also be learned (Bilda et al. 2006). Similarly, Akalin and Sezal (2009), following Edwards (1979), maintain that drawing is important for design- ers as a tool for communication with others and that it helps them to see and understand the forms with which they work. Through sketching, students learn to think with illustrations, develop ideas and solve complex problems (see also Seitamaa-Hakkarainen 2000). Thus, the act of drawing seems to be intimately bound with thinking: illustration describes the mental

processes of internalized images and constructs an interpretation that the outside world can see and understand (Jung and Sato 2010).

It appears that the design process is not linear but rather iterative where repeated cycles gradually drive the problem solving towards a solution (Zeisel 1981). Because designing is time consuming as well as a challenge for teachers in content planning and instruction it is easily omitted in class sessions. The present study showed that the external constraints like the design institution and project timetables decreased the time for designing. In all cases 75□90 minutes were used for the designing processes: introducing the ideas (teacher as the main actor), working with the idea and visualization (undergraduate textile design student as the main actor), and preparing the final design for a product (P). The museum visit as a source of inspiration was excluded from the time calculations (Case 3). In this short period, undergraduate textile design students did not reach the state of iterative design cycles nor did they learn how to use their sketches consciously to develop their designs. Rather they produced a few alternatives from which they could choose one. Only in Case 2 did undergraduate textile design students develop their drawings further by enlarging and condensing sizes of the chosen figures, after which they searched the composition with several variations. However, in spite of the short time of designing, the outcomes showed that new stimuli and visualization techniques had an effect on the conceptions; thus, design is important in both pedagogy and actual creation. This conclusion was drawn against the previous class- room experience of the teachers, which had shown that, in designing, the undergraduate textile design students very eagerly followed ready-made images and forms like circles and hearts. This was revealed through the teachers' interviews and videos, while the undergraduate textile design students' statements revealed that they did not trust themselves in creating a fresh vision without stimulation: 'I would not have thought of such technique on my own'.

4.3. Stimuli for visualization and design

Cotton and Haddon (1974: 20) have realized the influence of the surrounding visual environment on people and how they see their own illustrations. Western culture, which is dominated by photographic images, seems to value realistic illustrations, and thus raises the threshold for drawing and illustration. Cotton and Haddon claim that children often underestimate their ability to draw because their self- confidence is easily undermined and they doubt their skills to fulfil the unwritten expectation presented by pictures in books and magazines (Cotton and Haddon 1974: 20). Furthermore, investigation has shown that the majority of undergraduate textile design students as well as teachers agree that the appreciation of art lays in realistic representation . In the research data, this pattern of thinking of realistic representa- tion appeared in the teacher's comment (T1) that forbids undergraduate textile design students to draw hearts or anything representa- tional. In addition, in Case 2 the watercolour technique was chosen because it 'did not allow too detailed drawing' (T2). In both of these cases, the teachers had presentiments that undergraduate textile design students would draw realistic illustrations if they were not guided to visualize differently. Teachers preferred rough and simple lines to details because they were easier to work with towards printing designs than careful and detailed draw- ings done with sharp pencils. The other aspect of underestimating one's own illustration appeared in undergraduate textile design students' comments about their work. One student

stated, 'This looks awful', about a watercolour paint- ing while another said, 'There is nothing nice here', when searching an area with the window frame (Case 2). According to the questionnaire, undergraduate textile design students agreed that designing was difficult or challenging.

How can the problem of undergraduate textile design students undervaluing their own skills of illustration be overcome? Thomas (1995) argues that drawing is not an easy skill to master. However, young children generally become more skilful as they grow older. According to studies, the principal sources of inspiration for most drawings can be traced to pictures that children have seen and adopted. Thus, they seem to learn drawing skills by copying pictures available in their environment. When children draw some- thing that they have seldom, if ever, drawn before, they show more variability in illustrating than do children who follow well-practised procedures and familiar topics (Thomas 1995). It is more likely that children will draw from a fresh vision if they are presented with objects that are new to them and for which they have no schema. For example, minute objects seen through a magnifying glass or microscope or that can be held in the hand or be experienced in a haptic way provide intrinsic qual- ities and lead to unrestrained drawing. Such objects are interesting because of the associations they have for the observer (Cotton and Haddon 1974: 20). Both of these findings reinforce the argument that schemata, copied from past pictures or discovered and developed by trial and error, are the essential basis for picture-making. These also show that an apparent inflexibility may arise from habit rather than limits of cognitive capability (Thomas 1995).

This study confirmed the importance of unknown schemata for learning. Undergraduate textile design students showed variability in illustrating because they used familiar techniques in a new way; they discovered unknown topics and drew something they had never drawn before. Each teacher planned a different way to inspire undergraduate textile design students: there was a slide show of textile art accompanied by a discussion (Case 1), music with bodily action (Case 2) and a museum visit (Case 3). The rough illustration techniques that were introduced offered undergraduate textile design students a strong visualization method and a way to concentrate on forms rather than details. With regard to the design process, the majority of the undergraduate textile design students said that they learned new visualization and elucidation techniques that they would not have thought of on their own. As the undergraduate textile design students stated,

The whole technique was great! The design was more artistic and different. I would have not thought of such technique on my own.

[Without the teacher's advice] I would have probably designed a simple figure like a circle.

It was fun to search for an interesting view through the hole [in the paper].

However, the findings also show that a group of undergraduate textile design students lacked flexibility and would have liked to work from habit. The data obtained from questionnaires and video analyses indicated that one group of undergraduate textile design students favored the introduced new techniques,

whereas another group of undergraduate textile design students found the unconventional visualization techniques laborious and would have preferred the conventional ones, which they claimed to be easier. A student in this group noted,

It would have been easier just to take a checked paper in the form of the slipper cover and color the pattern there with colored pencils. It would have been easier to design a simple figure, a circle or something.

These statements also support the observations of Cotton and Haddon (1974) and Thomas (1995) that the principal sources of inspiration for the drawings can be traced to pictures and forms that children have seen and that most follow well-practiced procedures and familiar topics. This study showed that, through free and uninhibited techniques (aquarelle and collage), the undergraduate textile design students did not focus as much on what the sketches looked like, but on the idea and the feeling in the illustrations. This was possible because the technique did not allow detailed drawing and also the teachers' guid- ance towards non-representative imagery. One student suggested, 'The figures bear resemblance to the cave paintings!'. Furthermore, the usage of only part of the drawing in the design was new for the undergraduate textile design students; that is, the window framing technique made undergraduate textile design students think that the outcome was more artistic than they expected. One student noted, 'The thing [craft object] is nice as a bag, although it was not very nice in the beginning'

4.4. The role of the teacher

The basis of creativity is a feeling of confidence. For the undergraduate textile design student, this depends on the sense of personal security and self-estimation as well as the attitude of the teacher. Teachers and their enthusiasm have a large influence on undergraduate textile design students and particularly on the values present in classrooms (Cotton and Haddon 1974: 10–11). Cotton and Haddon (1974) point out that the teacher is the key person to lower thresholds to create. It is the teacher's duty to keep children's interest and confidence high, especially during the difficult periods during which they tend to reject their work. To that purpose, teachers may introduce rough techniques as a medium that offers the possibility to move beyond naturalistic work. The opportunities to explore and master the materials encourage new ways of expression (Cotton and Haddon 1974: 20–21, 22, 25).

In this study, the teachers' enthusiasm was seen and heard in their way of talking to the undergraduate textile design students, for example as a rising intonation, and how they encouraged undergraduate textile design students. Teachers had also put a lot of effort into their lesson plans. Of course, one needs to keep in mind that the lessons were the final teacher training assignments, and thus more time will have been spent in preparing them than in the case of a regular teacher preparing her or his lessons. All teachers encouraged undergraduate textile design students and gave them further advice and hints to continue with the chosen theme in situations in which undergraduate textile design students were unsure or underestimated their skills. For example, the following dialogue was observed: 'This does not look nice' (P, Case1). 'Yes, it does. You may try different greens [yarns]. Hmmm, this is very good. Several different greens over there' (T1, original emphasis).

Cotton and Haddon (1974) point out that it is important that undergraduate textile design students have the freedom to choose the technique appropriate for them and the task they are tackling. Before making a decision about technique, undergraduate textile design students need knowledge about different techniques and their potential for the visualiza- tion of an idea. Experience of materials of painting and drawing is an essential component of growth in creative work and the teacher should provide a range of materials and stimuli that provoke their use in an imaginative way (Cotton and Haddon 1974: 26). Similarly, Kopper and Power (2010), following Chappell (2007), emphasize the importance of the teacher's attitude in fuelling the crea- tive process. Since undergraduate textile design students are accustomed to reproducing memories of pictures they have seen, the teacher's role is often to help the undergraduate textile design students to develop ideas derived from their own experiences (Cotton and Haddon 1974: 26). At the same time, giving undergraduate textile design students the freedom to visualize and elucidate their ideas does not mean that the teacher should never restrict their expression. Undergraduate textile design students would need a wider experience in order to choose the scale and technique from knowledge rather than habit (Cotton and Haddon 1974: 25).

The role of the teacher is to help the undergraduate textile design student gain the power to accomplish the task. The teacher should not be afraid to put new opportunities before undergraduate textile design students or to give them clear instruction on how to begin exploring the materials and ideas; if the teacher only provides a range of materials without teaching undergraduate textile design students how to use them, the undergraduate textile design students are very likely to experience frustration and continue to use those items with which they are already familiar. It is essential for the process to be taught in such a way that it opens up a range of possibilities and is not restricted to one result. There is not one right way to resolve a creative problem. The teacher's role is to focus the undergraduate textile design students' attention on the various aspects, and through discussion help to structure experiences in a way that they become manageable and can be expressed. In addition, it is important that the undergraduate textile design student real- izes that he or she has a technique at his or her command that can be used in a variety of ways to suit his or her purposes and that it can be used in conjunction with other techniques. Thus, it is vital that the teacher, at least sometimes, deliberately restricts the undergraduate textile design students' choices so that they gain experience of a particular medium or process (Cotton and Haddon 1974: 8–9, 26) and actively encourage undergraduate textile design students to search for new ideas, to develop ideas further and not to be satisfied with the first solution.

In this study, the introduced rough illustration techniques offered undergraduate textile design students a visualization method they were not used to. With regard to the design process, the majority of the undergraduate textile design students said that they learned new visualization and elucidation techniques that they would not have thought of on their own. This not only stresses the importance of learning but also confirms the earlier (Cotton and Haddon 1974; Bilda et al. 2006) observations that the teacher has a central role in introducing new techniques and sources of inspiration and helping the undergraduate textile design students to execute their ideas in forms derived from their own experiences. In this study, undergraduate textile design students were stimulated by the museum visit, slide show and dancing.

The conceptual and concrete models used as tools for communication between students and teachers help students to improve their design ideas (Akalin and Sezal 2009). Therefore, when decid- ing on the most appropriate technique for elucidation, teachers must consider what idea needs to be expressed and what role concrete visualization has in the designing process.

The interviews of the craft teachers reveal that the teachers are sometimes unsure about their ability to guide the undergraduate textile design students in visualization and elucidation. However, the teachers were willing to learn more about different visualization and elucidation techniques and about possibilities and ideas for expanding on them in teaching. The interviews showed that teachers may not be able to put knowledge into practice if they are not taught how to do so. In addition, in their article, Kopper and Power (2010), following Alter (2007), expressed that the lack of confidence of a teacher in his or her own skills is an obstacle to effective teaching. Thus, it is important to teach the visualization and elucidation of ideas to teachers and to encourage them to use different techniques, not only sketch- ing with a pencil and white paper, even though that method is easy, time saving and quick. Design is an important part of the craft process; thus, the visualization techniques used should be inspiring rather than obstructive. Similarly, teacher education should offer teachers tools for creating new knowledge and enthusiasm.

4.5. Integration

The research data collected from student questionnaires and teachers' interviews showed that the Natural Dyes project enhanced meaningful learning; the project was meaningful and interesting for both the majority of undergraduate textile design students and the teachers. All teachers agreed that it was meaningful to teach a project that integrated different coursesand created a complete continuum even though the cooperation was challenging because of the exterior obstacles such as the design institution time table and class periods. The project was interesting to majority of undergraduate textile design students, because the learning was connected to phenomena, colours and textiles, important in the undergraduate textile design students' own reality and lives in a concrete way. At the same time, it is important to keep in mind that a minority of undergraduate textile design students did not see integration or working in a project as a method that was any better than the conventional ones. Thus, there seems to remain a challenge in reaching every student in a positive way towards new challenges and learning.

Through the Natural Dyes project, the individual courses of chemistry and craft were part of the greater entity as realized by the undergraduate textile design students, who made the following comments.

Yes, I now understand the whole thing and not only what I see! [A statement said by a undergraduate textile design student when she understood why and how textiles were colorful.]

Because of combining the knowledge of chemistry and craft, I now understand better where the color of clothes comes from.

I have learned that there are different chemicals used to create color in textiles.

These statements also reveal that the color phenomenon was understood completely: the undergraduate textile design students understood why and how textiles were colorful. This understanding also enhanced the meaning of the color and their own design of the craft object. One student noted, 'The final product was just as I designed it to be – personal. And I made everything by myself – the color, the material, the design – everything'.

The Natural Dyes project increased the teachers' cooperation at the design institution. Several studies have shown that it is difficult for teachers to find time for cooperation during the design institution day, and thus very little collaboration is undertaken (Sundas 2004: 65–66; Saima 2008: 51–54). It is important when laying out a project to reserve time for collaborative planning and to schedule meetings before- hand for the duration of the project. The time needed for planning is often underestimated, and time is reserved only for the actual activity, i.e. teaching and learning. However, the statements of the teachers' in this study revealed that well planned is more than half done and that it is easier to coop- erate when there is communication.

5. Conclusions

The first research question concentrated on finding out what effect the design process and the tech- nique for elucidating an idea have on the final craft product. This study showed that the teacher has a significant role in guiding undergraduate textile design students to discover new ways of expressing themselves. Rough elucidation techniques seem to offer undergraduate textile design students a stronger experience of success and lower their threshold for creating. This leads to more gratification and better learning results. Also, the undergraduate textile design students described the outcomes as different and unconventional.

The second research question asked what effect the design process and the technique for eluci- dating an idea have on the undergraduate textile design students' conceptions of the designing and production process. Undergraduate textile design students real- ized that designing is difficult. However, when they learn new visualization and elucidation techniques, they become enthusiastic about them and this enthusiasm increases interest towards learning and finishing the project. Evidently, there is a group of undergraduate textile design students that lacks flexibility and would like to work from habit and this group sets challenges to the teachers.

The study showed that integration of different courses is not a self-evident truth and it meets obstacles. The habit of working in a conventional way is strong in design institutions; this appears for both teachers and undergraduate textile design students. It needs extra effort to break this schema. Teachers are the key persons and they need support and ideas on how to discover new ways of teaching and planning curricula. Investments in teacher education and training are usually rewarded with higher levels of student success.
The number of people involved in the study was small and the results may not be generalized to a wider extent. In addition, the comments obtained from the teenagers were exiguous. However, the study gave other valuable information about the effects of teaching on the undergraduate textile design students'

conceptions and learning. This information may be utilized in teacher training when guiding craft teachers to look for their own teacher character and ways of teaching design tasks and cooperative learning projects. Furthermore, it is important to notice that creativity and interdisciplinary experimentation brings synergy into the design institution system's learning environment. Art and craft courses introduce new ways of exploring creativity and ingenuity, which are needed in learning within all design institution courses.

As a researcher I have tried to be as objective as possible. This research has been made in National College of Arts Lahore Pakistan in Textile design department and thus all statements are my translations into English, and they may have a different echo compared to the original statement said in Textiles. Finally, a study is always a researcher's interpretation of the events.

References

Akalin, A. and Sezal, I. (2009). The importance of conceptual and concrete modelling in architectural design education', International Journal of Art and Design Education, 28(1) 14–24.

Alter, F. (2007). Understanding the role of critical and creative thinking in Australian primary design institution visual arts education, in 2nd International Arts in Early Childhood Conference, University of New England, Australia, 5–7 February.

Anila (2009). Contextualising craft: Pedagogical models for craft education. International Journal of Art and Design Education, 28(3), 249–60.

Bilda, Z., Gero, J. S. and Purcell, T. (2006). To sketch or not to sketch? That is the question, Design Studies, 27(5). 587–613.

Chappell, K. (2007). Creativity in primary level dance education: Moving beyond assumption , Research in Dance Education, 8(1), 27–52.

Cotton, A. and Haddon, F. (1974). Learning and Teaching through Art and Crafts, London: BT Batsford.

Edwards, B. (1979). Drawing on the Right Side of the Brain: A Course in Enhancing Creativity and Artistic Confidence, Los Angeles: J. P. Tarcher.

Garber, E. (2002). Craft education in National College of Arts Lahore Pakistan: Definitions, rationales and the future, International Journal of Art and Design Education, 21(2)132–45.

Garner, S. (2002). Briefing illustrators: Revisiting the value of sketch images , International Journal of Art and Design Education, 21(3). 234–45.

Huotilainen, M. (2012), How does craft nourish the brain?', Lecture, Library of Kerava, Keravan Opisto, Kerava, 20 March.

Jung, E.-C. and Sato, K. (2010). Methodology for context-sensitive system design by mapping internal contexts into visualization mechanisms, Design Studies, 31(1). 26–45.

Karppinen, S. (2008), Craft-art as a basis for human activity', International Journal of Art and Design Education, 27(1). 83–90.

Kopper, C. and Power, B. (2010). Illuminating the gap: An overview of classroom-based arts educa- tion research in Australia, International Journal of Education through Art, 6(3).293–308.

McLennan, D. M. P. (2010). Process or product? The argument for aesthetic exploration in the early years , Early Childhood Education Journal, 38(2), 81–85.

Räisänen, R., Sundvall, M., Kovanen, P., Timonen, T. and Mäkelä, A. (2003). Integration at upper comprehensive design institution−Natural colorants as a method for the integration of biology, chemistry, art and craft lessons , Paper presented at the European Conference on Educational Research, University of Hamburg, Hamburg, 17–20 September, http://www.leeds.ac.uk/educol/documents/00003413. htm. Accessed 7 April 2014.

Saima, S. (2008). Integration of home economics and chemistry in secondary design institution', Master's thesis, Pakistan: University of Pakistan.

Seitamaa-Hakkarainen, P. (2000). The weaving – design process as a dual-space search', Research Report no. 6, Ph.D. thesis, Pakistan: Department of Home Economics and Craft Science, University of Finland.

Sundas, M. (2004). Craft and textile teachers' experiences and ideas of integration, Master's thesis, Pakistan: University of Pakistan.

Thomas, G. V. (1995). The role of drawing strategies and skills', in C. Lange-Küttner and G. V. Thomas (eds), Drawing and Looking, London: Harvester Wheatsheaf, pp. 107–22.

Virtamaa, A. (ed.) (1980), One hundred years of craft teacher education 1881−1981', Finland: University of Finland.

Zeisel, J. (1981), Inquiry by Design. Tools for Environment-behavior Research, Cambridge, UK: Cambridge University Press.