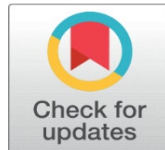
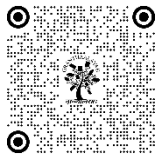


EFFECTIVE WAYS OF TEACHING FORM STUDIES AS A COURSE TO PRODUCT DESIGN STUDENTS

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ABSTRACT

Form studies has been a very important course to build the foundation for Product Design students. A form of a product or any object should fulfill the emotional needs of the user for which it should have the visual qualities desired by the user. These qualities are not easy for the students to perceive during the early years of graduation. Even if they can perceive them, then many of the students find it difficult to translate them into the form due to the lack of sketching and visualization skills. Therefore, the students often face difficulties in understanding the nuances to create a form. Many of the students struggle in understanding the logical process of form generation which is very important to generate the emotional qualities in a Form. Therefore, it requires training of the eye and mind to understand the process of form creation. Nature is seen as the biggest source of inspiration for designers. One can see the principles of design present in many of the natural forms present in nature. This paper demonstrates and explores the steps involved in teaching form studies as a course at the University to interior and product design undergraduate students taking inspiration from nature. The importance and effectiveness of this course is demonstrated in this paper through hands-on activities and assignments which are given to the students at the University.

Keywords: Form In Nature, Shapes & Form Development, Emotional Qualities, Form Studies, Hands on Approach

1. INTRODUCTION

Humans from an early age started documenting their routine chores of living, hunting animals, and celebrating festivals by painting certain shapes of animals on rocks which is known as Rock art. Many places in India and abroad have such rock art conserved under heritage sites. Fig. shows the rock paintings created at Bhimbetka rock shelters. The depiction is symbolic rather than representative. Even made in such a distant past, one can understand and derive meaning based on the shapes and scenarios created through symbolism. The upper and the lower half of the human body is created using two triangles which are bilaterally symmetrical about the horizontal axis. The head is made using a circular shape, hands and legs are made using lines. Many such human figures are shown together suggesting that they used to live in a group. Many are carrying sticks as weapons to protect themselves or fight with the wild animals. Lines and shapes are again used to show different domestic animals and birds, for e.g. a person sitting on a four-legged animal with a tail is

shown which looks like a human sitting on a horse. Towards the right is a bird-like shape combined with lines drawn as feathers and claws of a hen.



Fig. 1. Bhimbetka painting on rocks

So, these lines and shapes in rock art are used to depict some meaningful information. When human eyes pay attention to such a stimulus or a subject, the brain tries to give meaning to it. Visual Perception defines the brain's ability to make meaningful information from what the eyes see.

Designers and architects as creative people try to generate the shapes in the logos or forms of the products, cars or buildings considering the message which they want to convey to their target audiences. This can easily be observed by taking examples from the field of Automobile Design. Some of the cars look elegant, some look aggressive, some look feminine and some masculine. Similarly, many products from a simple water bottle to watches, mobile phones, electronic appliances like electric kettle and toasters are designed by designers to resonate the product's personality with the personality of the aspirational buyers. This process of giving meaning to a designed object through its appearance or form doesn't come overnight as it requires firstly to understand the aspirational needs of the user and then translate it into a meaningful form. This translation of the form requires visualization as well as material handling ability through hands-on practice.

In the design institutes globally, during the Graduation program in Product Design, form studies is one of the courses which is taught in the initial years of the Program. Considering the importance of this course shared above, it is of the utmost importance to design and deliver it well and make it understandable by the design students. If not taught well then, the students might not be able to design for the industries or deliver the desired outcomes expected by the industries. This paper shares the activities, assignments, and outcomes of form studies as a course designed as per Bloom's Taxonomy (Krathwohl 212-18) at Avantika University, Ujjain and successfully delivered to a set of 100 plus design students.

2. LITERATURE REVIEW

Many famous designers and architects work around the philosophy of "form follows function". It is an expression which was first coined by Louis Sullivan in the 19th century (Lambert). Verma et al. proposed different case studies based on form follows function (Verma and Wood). It is a design by analogy approach, where Reverse engineering is used to depict products evolution over generations. C Akner.Koler proposed expanding the boundary of form theory that was initially developed by the painter Alexander Kostellow and sculptor Rowena Reed Kostellow (Akner-Koler). Greet documented the methodology and all the teachings of form theory taught by Rowena Reed Kostellow (Greet). Her teaching supported the design for industry as well as self-expression. Albert W Porter proposed the world of shapes and forms (Albert W Porter). He also discussed the qualities of shapes like light and delicate, heavy, and solid, smooth, and textured, static and dynamic, transparent, translucent and opaque, soft and hard. The important thing he describes is how to see shapes as design. (Puhalla) combines forms and space and proposed that both depends on aesthetic understanding of forms. He proposed the language of form i.e. order of spaces. Govers et al proposed that consumers prefer the product which matches with their personality (Govers 189-197). They have defined product personality as symbolic meaning given to product itself and described in terms of human personality traits.

According to the authors, very few or none have designed a course on form studies keeping nature as the core theme. The course is designed by gathering inputs from all the sources studied during the literature review.

3. COURSE STRUCTURE

The form studies course is developed with an objective to sensitize the students to be able to design meaningful forms with good aesthetics. The learnings of which shall be utilized in designing the products to meet the user's aspirations. The course is for 3 credits (120 hours) themed around 'Form in Nature' and conducted for the duration of 3 weeks by a team of 5 faculties. The course structure followed the 6 levels of Bloom's Taxonomy (Krathwohl 212-18):

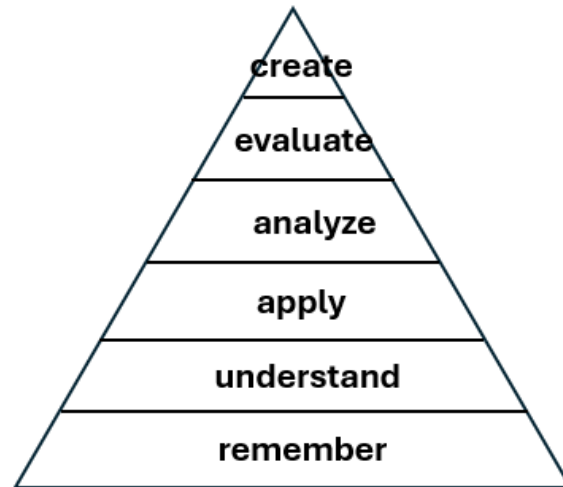


Fig. 2. Bloom's Taxonomy (Bloom).

Remember: Knowledge to the students was shared through a series of lectures prepared for them to remember the basic concepts. The topics covered were - Visual Perception and Gestalt laws, Shape, Form as the elements of Design, Figure & ground, Principles of design like Symmetry, Balance, Proportion, Rhythm, Unity, Movement, Emphasis & Hierarchy. The lectures included many examples of the subjects present in Nature to help the students find and capture the interesting subjects from nature to create forms.

An additional lecture on "Brand personalities and product personalities" was also delivered to make them understand and derive meaning hidden behind the shapes in logos and forms of products to reflect the desired personality.

Understand: Form studies aim to develop understanding of how line and shape as the elements of design are used to give meaning to a form. For a meaningful form to come into existence, the understanding of human-like adjectives – like funny, trustworthy, creative, unique, straightforward, dishonest, caring, serious etc. must be there. It's very important to understand the meaning of these adjectives before translating them into the visual language of a form. It's like one needs to understand one language to translate it into the other. After delivering a set of lectures which contained visuals as examples of different logos and products created by designers to give them human-like characteristics. Such human-like characteristics are given to the logos and products to reflect one or the other personality. By giving a personality that matches with the personality of a customer, the likeability of the customer purchasing from such a brand increases. So, an emotional association is created between a company's brand and the consumers.

Many companies select either one or more out of the five brand personalities like – Excitement, Sincerity, Ruggedness, Competence, Sophistication to represent their product family. To check the understanding of the students, short quizzes on logos & products with a few adjectives given as options was circulated using the google form. Results of which show the fair understanding developed by the students of the relation of logo & product amongst the given adjectives as options. The left side of figure 3 shows the results of quiz on logos and the right shows the quiz results on products.

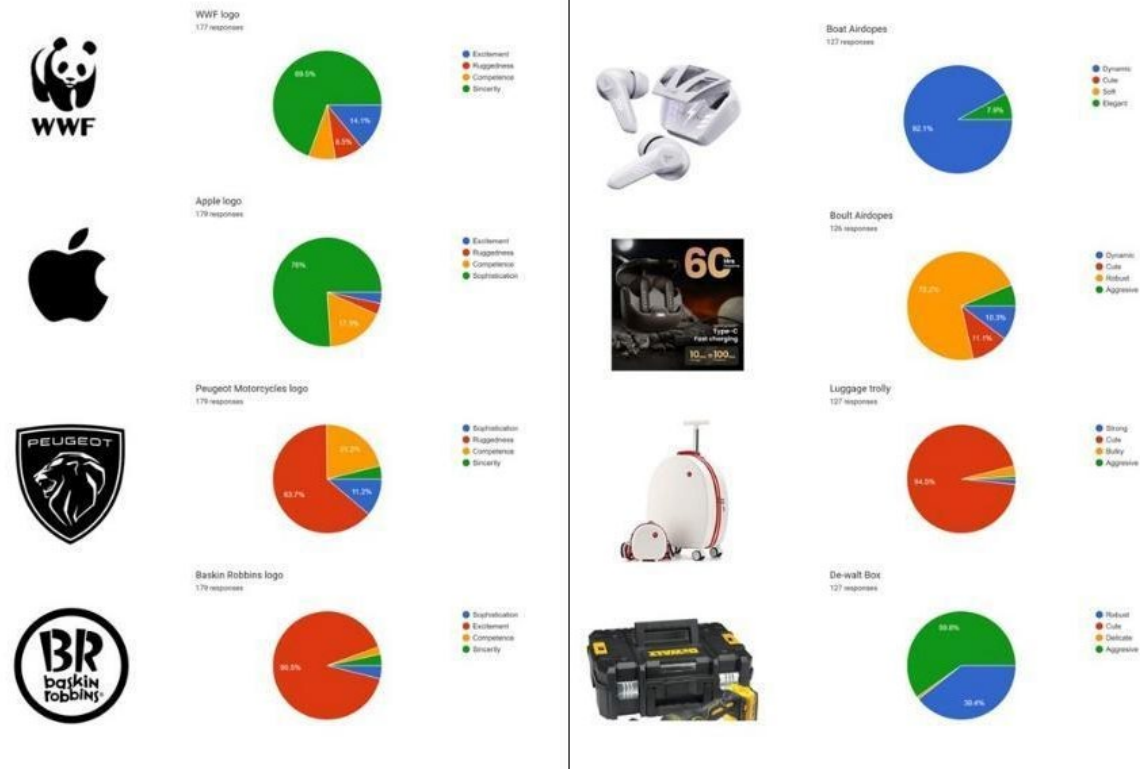


Fig. 3. Quiz on logos and the right shows the quiz results on products.

Apply: For the students to apply the knowledge shared through a series of lectures a set of Assignments were given. In the first assignment, the student had to find and capture a natural subject and decide a few adjectives considering the shape of the subject. Each student picked up a suitable form/inspiration from nature and decided/evaluated as per the closest in terms of appearance. The various options of adjectives given to them as examples are balance, elegant, stable, united, pleasant, calm, introvert, extrovert etc. Some of the sample works of Assignment 1 done by the students are shown in figure 4.



Fig. 4. Students work of Assignment 1- Deciding the adjectives for the captured subjects.

Analyze: The students had to further apply the knowledge in the second part of this assignment by creating the visual representation of the adjectives through sketches. During this creative process they had to stick to the original inspiration. The shapes generated by the students in this assignment should carry the meaning of the adjectives as well as the essence of the inspiration. For e.g. if a student has taken a leaf of a tree as an inspiration with elegant as the adjective then the drawn shape should have the essence of the leaf's shape as well as the elegance represented through

smoothness and continuity of the line. Some of the students' explorations are shown in figure 5. The students were supposed to examine and study the sketches created by them along with the course faculties. Out of the many explorations done by the students, a few which appeared to convey the meanings of assigned attributes were highlighted and discussed. The analysis of sketches was done considering the use of lines and the kind of shapes created by the students. The role of faculty is very important during this stage since the students cannot identify the shapes which are conveying the meaning by themselves. It requires enough experience and training of mind and eye to understand the meaning of shapes and forms. The highlighted sketches were to be converted into 3D shapes in the next part.

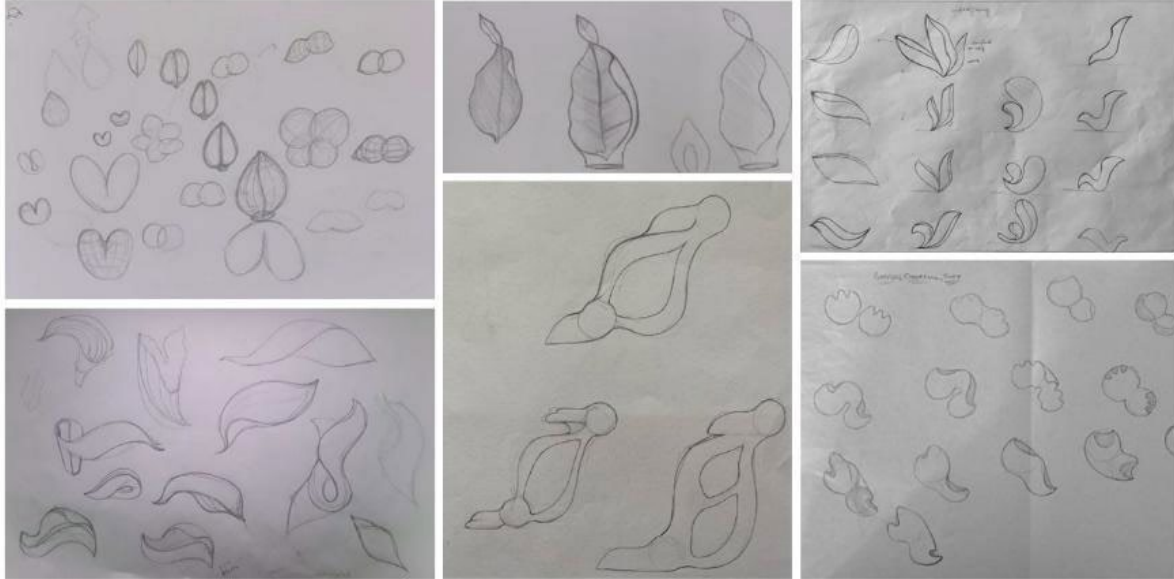


Fig. 5. Analysing Students explorations of shapes derived from the chosen inspiration.

Evaluate: This part required selecting the 3D shape which best conveyed the meaning out of all the 3D explorations done by the students. Again, the intervention of faculty was required in this process to discuss and help students in the selection process. The selection was done by associating the form drawn on paper with the chosen inspiration and adjectives assigned to it by the student. A few of the selected forms drawn by the students are shown here in figure 6.

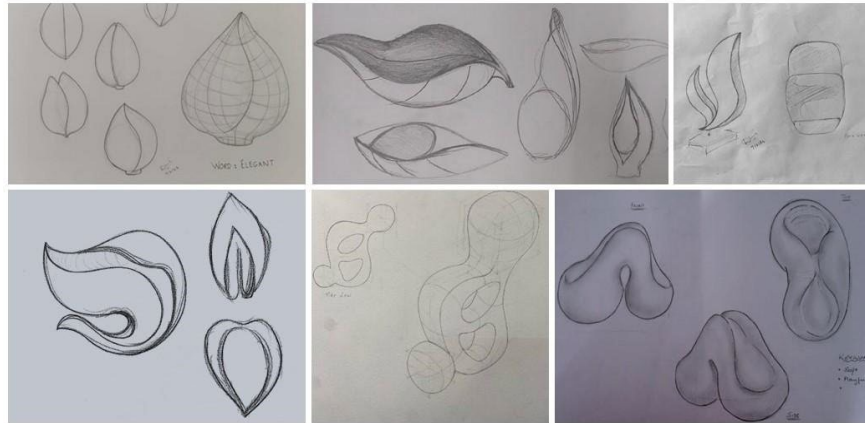


Fig. 6. Evaluating the forms explored by the students.

Create: The last part of this assignment required creating the final selected form using high density thermocol blocks by the student. The selected sketch of the 3d shape created on paper was utilized by the student to design the form. The output of this part of the assignment is shown in figure 7. The entire assignment was showcased by the students in an

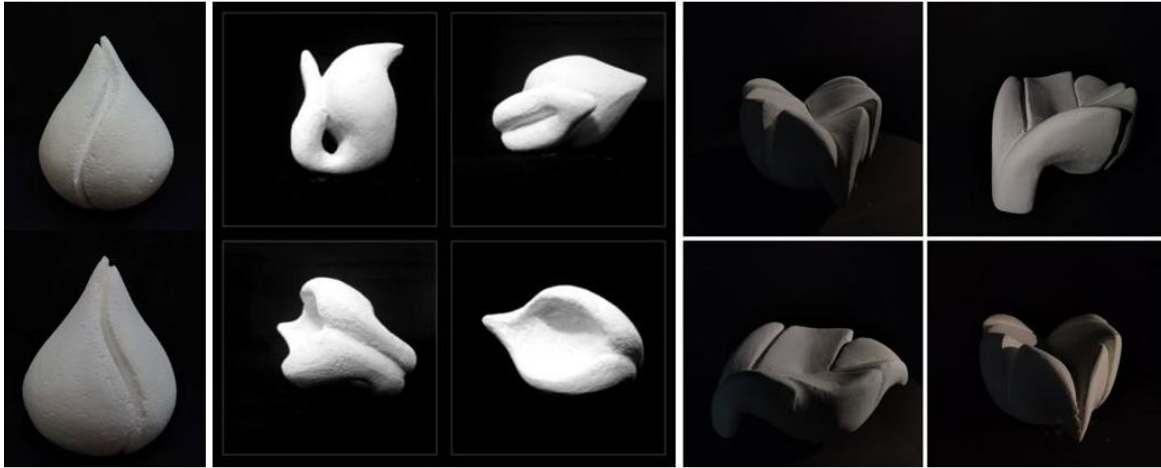


Fig. 7. Forms created by the students using thermocol blocks.



Fig. 8. Forms exhibited by the students post course at Avantika University, Ujjain.

4. FINDINGS & CONCLUSION

Keeping 'Forms in Nature' as the theme of this course helped the students to understand principles of design by finding and capturing the real subjects present in nature which in turn resulted in creating beautiful forms by the students. Also, understanding Gestalt laws, concept of figure and ground helped students to sharpen their observation. However, many of the students showed difficulty in understanding the co relationship between their sketches and the adjectives derived from the subjects. More time can be spent during the ideation stage in discussing the relationship between the forms and adjectives. Like - how one perceives elegant form as elegant? What kind of visual quantities does a form have to look elegant or happy or cute? The more understanding the students will have in this stage the better outcomes as meaningful forms are anticipated to appear.

The course on Drawing and Visualization as a precourse to this course immensely helped some students in visualizing and representing their forms on A3 size papers. Students were strictly told to physically sketch on paper rather than digitally as drawing on big sheets gives more space to freely draw with one's hand. Also, paper and pencil are the most familiar medium to the students since they have been using it for many years resulting in producing better results.

Many of the students faced difficulty in visualizing and creating 3D as well as orthographic drawings out of the 2D shape. The faculties helped the students by demonstrating how the 2D sketches can be converted into 3D. Students require more training to convert 2D organic shapes into 3D using isometric or perspective drawing techniques. Also, they need to be sensitized about dimensions to maintain the size and proportion of the form to be created as proportion is very important for a form to retain its beauty. Keeping the course themed around nature added a lot of value to this course since many well-known architects & designers take inspiration from nature to design buildings & products with beautiful forms. According to the authors, very few have given so much importance to nature in the form studies course.

CONFLICT OF INTERESTS

None

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None

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