

Exploring Indigenous Innovations; Insights and Experiential Reflections on Module Development and Delivery.

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ABSTRACT

Innovation is the key to any business success today. In these increasingly saturated global markets, capability to innovate is the vital strength that can provide designers, the much needed edge. It is therefore important for students of design to understand in depth, the definition and the process of innovation. Also, to gain new insights and inspirations for innovations, students need to develop the attitude to constantly explore and sensitise themselves to their surroundings.

The paper describes in detail the authors' experience of developing and teaching the course modules titled '*Indigenous Innovations*' and '*Craft and Technology*', to the students of Product Design discipline at NID and IIT Guwahati respectively. The course module is one such creative attempt to encourage students to explore the indigenous resources that are available outside and through the process, generate curiosity and thirst for new knowledge among them.

One would, in day-to-day life, come across quite a few products that may have been innovatively modified personally / locally to meet the specific needs and requirements of the person or persons involved. These innovation/s could be in the form of non-conventional use of a given product, local improvisation dependent on the felt needs or constraints, new application of the product / materials, or by modification through addition or subtraction or in form of systems. These indigenous resources that are available outside can be used as excellent real life case studies.

The course directs students to look out for such products/ solutions during the vacation, and select one such product / solution that they find meets the above criteria and are then directed to document the same. Through the documentation and inquiry, students understand the process of innovation, the specific need to arrive at a solution, the context and the reason to arrive at the specific solution, and the previous knowledge and resources that led to the solution. It also helps develop sensitivity and respect for their surroundings and the society.

INTRODUCTION

This paper is an attempt to portray the experience and insights gained by the authors in developing and teaching the course modules in product design with a focus on exploring '*Indigenous Innovations*' at the two schools of design viz. National Institute of Design, NID, Ahmedabad and the Department of Design (DoD), IIT Guwahati. These modules

entail students to identify indigenously innovated, developed and modified products and services from their immediate surroundings and document the same. Through this process of documentation students not only understand the process of innovation but also develop a sensitivity and respect towards their surroundings and society. The module attempts to subtly arouse curiosity in these young minds by asking them to constantly graze for innovative solutions in their immediate environments / surroundings otherwise known to them as mundane. Through this process, the module aims to inculcate in a student the vital attitude of a designer to observe, investigate and learn from the field. "*We had to document one such product/ solution, over the 3rd semester-end vacation, in our home town. Having recently shifted to Dehra Dun, this course gave me an amazing opportunity not only to explore my new home but also to roam around the town's surrounding areas and come across surprisingly interesting and innovative things. To tell the truth, I hadn't really expected to find too many things of interest considering the relative backwardness of the area, but as it turned out, I was wrong. And I'm really glad about that*" , wrote Dhriti Dhaundiyal, a student of Under Graduate Programme in Product Design, after completing one such course module.

It is being increasingly observed that the new entrants at the two design schools arrived with limited visual vocabulary and limited interests to explore and learn from their surroundings. Increasing demands of study at the school, that is heavily theory centric, leaves the students very little time for play and for explorations. Coupled with this, the addiction to television and the increasing use of computer pose as major hinderance to the scope for these young minds to explore and sensitise themselves to their surroundings. These students with limited source of inspiration, experience, knowledge and thus inferences, when embark on their design projects face difficulty in developing a variety of alternative solutions / concepts. Students also lack in confidence and thus feel hesitant to go out and approach new people who may be end users, servicepersons, manufacturers, competitors or new clients, and cajole them to dig out the critical insights and understandings for their projects. In today's increasingly saturated globalised world, as the success of new designs increasingly depends on the softer and the intangible aspects of products, these weaknesses may prove major handicap to these young designers.

Learning from the field is thus made an integral part of the

curriculum in the design programme. Students are provided with a number of opportunities during their study and are encouraged to go out to the field and learn through interaction with various stakeholders. ‘Environmental Perception’ and ‘Craft Documentation’ are such unique courses offered at NID that are tailor-made to suit the Indian context, which have been further refined and perfected over the years. Similarly, the Department of Design (DoD), IIT Guwahati introduced ‘Craft and Technology’, a project based course that blends technology inputs and the rich traditional domain of crafts of the northeastern India. These courses require students to stay with the artisans / villagers for two / three weeks and document their macro and micro lives exploring and learning about their culture, tradition, profession, artefacts, etc. Various design projects that the students undertake as part of their study provide ample opportunities and challenges to face real life situations at the same time.

Both these modules, ‘Indigenous Innovations’ and ‘Craft and Technology’ attempt to motivate students to learn from field, before they embark on their design projects. These modules have been introduced to the students since the year 2001 and are offered at both undergraduate and postgraduate levels. Students of both these groups enter into the course with the basic skills such as drawing, sketching and basic understanding of design process.

The module ‘Indigenous Innovations’ is introduced at the end of the first semester so that they can carry out their assignment during the winter break (Diwali vacation), while they are traveling back to home or during their stay at home. The assignment does not actually require devoting intense efforts or major time commitment, but it makes the student conscious all the time to look around and find the solution that corresponds to the course requirement. In the beginning of the course, the introduction to the assignment is consciously kept open ended, yet brief, to maintain ambiguity in order to motivate students to develop their own understanding and definition of innovation through this process of documentation. When the students come back from their field studies, a display of their work is arranged in the form of a competition among the entire group. Each student presents the solution that he/she has documented and is encouraged to convince and justify his/her solution to the entire group. Varied and interesting interpretations of the definition of innovation emerge from their final display. Through the intense deliberations, while selecting the best ‘indigenous innovation’ documented, major learning and understanding of various types and processes of innovations take place. Through this journey, while the process of innovation gets demystified, the student also learns to appreciate the indigenous resources available outside.

Basic criteria that can be used by students as guidelines for selecting products / services are provided to them as part of their course abstract sheet. The student needs to select one such product / solution that he/she finds meets the given criteria and is then directed to document the same. Students are recommended to explore more such solutions and compare them from the point of view of innovation before finally selecting one such solution for detailed documentation. Through documentation and enquiry, students cover the process of innovation, the specific need to develop the solution, the

person’s / innovator’s previous knowledge and resources available around him / her that led to the specific solution, the context, and the reason to arrive at the specific solution.

The quest to understand the process of innovation in the improved *earthen diya* that was found in Nagpur, took Sonali Gharad, a Post Graduate student of Product Design to a nearby village comprising of about 25 potter families. The struggle for survival has resulted in this new design of the *earthen diya* (lamp), the flame of which now lasts longer than the candles that are available at a lower cost in the market. The tortoise

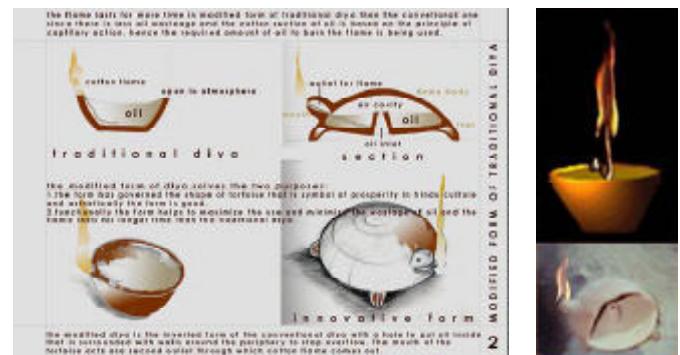


Image 01

shaped form of this new design of *earthen diya* (Image 01), which is the symbol of prosperity in the Hindu religion, helps protect the flame from wind and minimises the wastage of oil. Sonali traced the reasons of the popularity of *earthen diyas* and *Nagpurians* (people of Nagpur) love for festivals and celebrations to the successive dynastic rule of the Maratha kings. “*The cosmopolitan impression of these ruling dynasties is clearly seen on the sociocultural tradition of Nagpurians, though with modernisation the form and style underwent significant changes*”, observed Sonali.

Amit Patankar, another student (year 2004) documented the innovative uses/ affordance of the serving bowl. Serving bowl is a common and versatile utensil that one can find in most of the Indian Kitchens. The bowl is available in various sizes and is used for several purposes. Patankar documented the serving bowl being used to mix spices, to make certain pastes, in cutting slices of banana, in peeling sweet potato and carrot, for cutting garlic, to mould ‘idli’, used as a cutting template to cut ‘poories’ of uniform round size out of flattened dough, to pour and spread liquid on a pan to make ‘dosa’, (Image 02-07) etc. “*The simplicity of the product made me study its innovative uses by the Indian housewives. The uses (affordance) might not even have been thought of, before its manufacture*”, writes Amit in his document. “*The simpler the product, the more useful it is, in other words, less is more*”, concludes Amit.



Image 02-03



Image 04 - 07

While Amit was fascinated with innovative uses of a simple kitchen utensil like a serving bowl, his classmate documented the innovative modification that one of the auto rickshaw drivers in Delhi carried out in his auto rickshaw so as to relieve the wrist pain caused by driving daily for about 15hrs. He converted the brake lever of the front wheel into accelerator so that the speed can be controlled by pressing this lever (Image 08). The students, after completing this course, were thus suddenly finding great interest in exploring their surroundings, and they started noticing these little innovations carried out either by the workshop staff of the institute, roadside vendors, and repair and service people or even by their fellow batch mates. Most importantly, students started appreciating these innovations and the people behind them – the innovators. Nilesh Kirtane (year 2004) documented an innovative pencil sharpener that his fellow batch mate of animation film design discipline at NID had developed. An animator, who is always into rigorous sketching, requires his/her pencils to be sharpened at quick and short intervals. Looking at this need for a bigger container for dust collection, he developed a sharpener using the empty CD container and the normal sharpener available in the market (Image 09).



Image 08



Image 09

Innovation is typically understood as conversion of knowledge and ideas into something new and useful. These case studies of in-depth inquiry of arriving at such unique solutions, and subsequent group presentations and discussions have helped students gain vital understanding of the processes followed to arrive at such innovative solutions. This critical learning, at an early stage of their study, helps students develop their design approaches that would lead to innovative solutions.

At the Department of Design (DoD), IIT Guwahati,

explorations on the innovative use of eggshells as moulds for casting bee-wax candles led Divya Gupta to a novel concept of integrating patterns in lit 'diyas' for the Indian festival of lights - 'Diwali'. Siddarth Mohan on the other hand was fascinated in the manner in which bamboo was being heat bent and shaped to come up with the concept of a one piece bamboo 'sittee'. Addressing the demands for basic bus shelter, specifically for the rainy season, Nishant Gupta developed a structure using bamboo as a sustainable alternative for the rural village bus stop for locations in the vicinity of Guwahati. A.K Das (Faculty, IIT,Guwahati) was touched by the manual labour involved in the popular means of public transport, the 'cycle rickshaw'. He addressed the issues of improved ergonomics and basic shade in the form of an overhead hood in fiberglass to bring comfort to both the rickshaw puller and the customer. These are ideas that were generated in a participatory spirit through engagement and dialogue with the local people.

One would, in India, find amazing solutions, so indigenously developed by the common people to adapt and accommodate in order to make the most of whatever resources and skills available at their disposal. Here, design is not limited only to designers. Limitations in terms of resources, skill levels and fewer job opportunities motivate people to constantly evolve and innovate the ways for their survival and sustenance. These innovations could be either to increase the life cycle or usage of the available resources or products such as the auto-rickshaw used (doubles-up) as a school bus, or it may be to reuse or recycle the available product/ materials such as paper bags made from used news papers. In addition, offshoot applications are created to best utilise the products / resources available. Banana leaf used as a plate for having meals or washing machine used (mainly in northern regions/ parts of the country) to churn butter-milk, are a few such common examples that one would come across in the country. Purpose of innovation here extends beyond just the commercialisation of the idea. It is carried out to add value, to create new opportunities and above all to improve the quality of life of the people involved. By their very nature of development, these solutions/ ideas would have inbuilt considerations of many of its usability, practicality (in terms of its production / fabrication), ecological, cultural, and sustainability aspects of design.

Though, sometimes these innovative solutions/ ideas are locally termed as 'jugad' (fix-it-solution), they serve the purpose most effectively in terms of providing the most appropriate solutions for the local problems. As these solutions emerge from local knowledge and also utilise the local resources, they also carry great potential for their reproduction and/or replication for others to also benefit from the same. Gujarat Grassroots Innovations Augmentation Network, GIAN, a voluntary agency based at Ahmedabad with its branch office at the Indian Institute of Technology Guwahati campus, has been doing outstanding work in terms of identifying these solutions, documenting them, and facilitating their innovators to further improve the ideas into marketable products. These ideas also provide good opportunities and scope for designers and design students to take them up as design challenges. The opportunity to work with these grass-root innovators, through GIAN, has led the author Mr. Shashank Mehta to redesign the four wheel bullock cart and the pesticide sprayer. This work has also resulted in

inspiring design students to take up projects in these areas. It has also resulted in setting up of GRIDS design studio at NID.

Also, to be a member of the jury, since last few years, to adjudicate the '*best innovative product*' from the '*National Craft Fair*' organised every year in Ahmedabad, and attended by more than 500 artisans from across the country, has been the most enriching, learning and humbling experience for the author Mr. Shashank Mehta. Here, one would find solutions that connect and combine traditional skills / technology available to the contemporary needs and markets thereby helping the person / innovator create employment opportunities. A crafts person – a potter by profession, in a remote village of Gujarat applied '*teflon coating*' on the surface of the earthen hot-plates that are traditionally used by people to make '*chapatis*' (Breads). Teflon provides non stick coating on the surface, while the earthen hot-plate helps much needed slow heat for cooking. Combining modern technology/ materials such as Teflon Coating with the traditional earthen hot-plate helped this product find an urban market, which was otherwise used only in the villages (Image 10).



Image 10

While some of them might have evolved over the years, many of these solutions are developed by individual/s just to solve their personal problems, increase the usage of available resources or to generate employment opportunities utilising their limited resources and skills. One would find innovations at its best and used most appropriately to solve the very basic needs. Palm leaf fibre *brooms/sweeps* (a large size brush) were traditionally used in villages to clean the floors and large verandah in the villages. As the size of the home reduced and the floors that were traditionally made using cow-dung were replaced with ceramic tiles and marble floorings, these *brooms/sweeps* had lost their market. A crafts woman from the remote village of Chattisgarh, one of the states of India, developed a small sized *broom/sweep* (Image 11-12) that can be used in the urban households to clean and dust furniture, doors, and windows. This innovation helped her gain contemporary market for the materials that are available at her doorstep and most importantly, for the skill that she possessed, which would otherwise have been lost completely.



Image 11-12

CONCLUSION

There are such indigenous resources available outside that can be used as real life case studies for the students of design to learn and understand the process of innovation, and the factors that lead to their final outcomes - innovations. For today's global markets, innovation is the key to any business success. The students of design therefore need to develop critical capabilities to innovate. These case studies from the day-to-day life outside, are the most practical and simplified resources for them to learn and get inspired.

Design primarily is an attitude to observe, investigate, and learn from the field and apply the learning and new insights onto the new situations and new problems/ challenges, eventually, to arrive at the solution that is most appropriate in the context. It is therefore important to imbibe these qualities in design students, at a very early stage of their study. Developing such creative assignments that arouse interest and curiosity in young minds and motivate them to explore their world outside is always a challenge for the course teacher/ guide. Course modules '*Indigenous Innovations*' and '*Craft and Technology*' are such attempts towards this end. As course teachers, we feel satisfied to see that we have succeeded in broadening the perspective and understanding the definition and the process of innovation in these young minds. It has also helped create a respect for the resources that are available outside and the needed spark in these young designers to explore the resources to gain new insights.

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