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DESIGN DISCRIMINATION–REFLECTION FOR CRITICAL THINKING

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ABSTRACT

Design thinking based on problem-based learning is believed to promote reflective thinking in students. Students need to develop their reflective thinking habits to be lifelong learners and technical professionals. For this to happen, facilitators may first provide opportunities for getting students to reflect critically on their practice (for example through reflection journals) and secondly, guide reflective dialogue both between the facilitator and students, and also among students (Stein, 2000). In this paper, a framework is proposed to apply reflective design practice to nurture critical thinking, to go from the outside to the inside and influence changes in personal design decisions in Product-Service System (PSS) Design for Sustainability for undergraduate design students. The method is transferable to other disciplines as well.

Key Words: reflective, practitioner, undergraduate, design

1. INTRODUCTION

At Srishti Institute of Art Design and Technology, Bangalore, India students of the Bachelor of Design professional undergraduate degree programme, select some studio units in Business Services and System Design (BSSD) major in a choice-based system as part of their major or minor credits. The student mix in these units is multi-disciplinary from the second and third years together from the School of Design Business and Technology (6 majors, 200 students per year) and School of Law Environment and Planning (2 majors, 50 students per year). This research is from two BSSD studio units offered in 2017-2018 in Product-Service System Design for Sustainability – “Systems – Macro to micro look” and “How Systems Work or Fail – case studies”.

2. RESEARCH PROBLEM AND GOALS

Situation: Design educators use different tools to enable students to shape a reflective design practice within which their designs will reside to create impact. Students gather inputs through primary research (site visits, participatory planning) and secondary research (journal articles, texts, films, talks, multi-media, master classes, seminars and workshops).

Complication: The concept of sustainability in product-service system design has often been neglected in the present design world. In general design practice is more consumptive in nature and typically provides quick fixes at the micro-level. This has adverse negative impact on resources and the ecology and economy at a macro level and thus is unsustainable in the long run.

Objective: How can sustainability focused, contextual, self-directed work become part of a reflective design practice for students of design and engineering in undergraduate and graduate degree programmes?

Overarching question: How to propose a structured framework to enable reflective design practice in product-service systems for sustainability in a developing country?

Specifically, the desired result was located around the key issue of “How will design practitioners evaluate their own work and working process, and the work of others in relation to standards of the field of Product-Service System Design for Sustainability?”

3. THEORETICAL BACKGROUND

In modern thought, reflective practice is a conscious layering of the subtle over the tangible. This includes the thoughts, memories, emotions, feelings, beliefs and intuition over the observations made by the five senses and the resulting experiences. It enables a constant realignment, streamlining and sharpening of one’s work after sorting through uncertainty, instability, and conflicts to engage in a process of continuous learning and make it distinctive (Schön, 1983). Schön formulated his view on design in terms of “reflective activity” and related notions, especially “reflective practice,” “reflection-in-action,” and “knowing-in-action.” (Willemien, 2010). When a practitioner “reflects in action” his experimentation is at once all three – exploratory, move-testing and hypothesis testing. Exploratory testing is to see what follows, to get a reaction, and to play. Move-testing experiments have an end goal in mind. Hypothesis testing experiments confirm probable factors as causes for an effect in three ways – when they are simultaneously present or absent or vary along with an observed effect or phenomenon. “Reflective activity” may be defined as the “activity by which people take work itself as an object of reflection” (Mollo et al, 2004). All too often “the designer constructs the design world within which he or she sets the dimensions of his or her problem space, and invents the moves by which he or she attempts to find solutions.” (Schön, D. A. (1992).

In Indian traditional thought (Ghosh, Aurobindo. 2001) especially the Taittiriya Upanishad, there are five layers around the human soul. In general, external observations and inputs through the five sense organs create desires in manas (the sensory or processing mind), which together with chitta (consciousness, memory) are acted upon by ahankara (ego) to produce personal and distinct bhavana (emotions and feelings, likes and dislikes). These emotions and feelings are at the root cause of all human joy and distress. They could be conflicting and therefore need to be reflected upon with respect to dharma (idea of a law, or principle, governing the universe) by the buddhi (intellect, wisdom and the power of the mind to understand, analyze, discriminate and decide) to produce viveka (right understanding, discrimination, or discernment) for inner growth and knowledge. It is the buddhi, the discriminating faculty, and the freedom of choice that characterize us as human beings and the whole reason why emotions are generated from simple thinking.

Reflective practice was the basis of traditional Indian learning systems as seen even today in the heritage arts, crafts, and performing traditions. As an alternative to the post-colonial education system in India which is still predominantly Eurocentric many eminent personalities rooted in Indian philosophical thinking have influenced efforts towards indigenising the education system. The Indian thought on education shifted the focus of learning from the outside to the inside, from the teacher or facilitator to the learner in order to develop the learner’s individuality in harmony with society and nature. Swami Vivekananda believed that the process of learning is a gradual unfolding of the intrinsic quality of the individual through a mentoring process. Sri Aurobindo too placed emphasis on an all-round development of personality within the Indian experience. In his system of integral education he proposed five principal aspects relating to the five principal activities of the human being - physical, vital, mental, psychic and

spiritual (Ghosh, Aurobindo. 2001). “The chief aim of education should be to help the growing soul to draw out that in itself which is best and make it perfect for a noble use” – Sri Aurobindo.

Modern learning theories prescribe that deliberate reflection on the experiences of actions and responses is essential to produce insights (Loughran, 2002). This agrees with traditional Indian streams of thought. Reflective practice is self-directed and fosters critical thinking, problem solving, decision making, personal growth, self-knowledge of own beliefs, attitudes and values culminating in deep learning (Davies, 2012). Reflective thinking can be stimulated by both the learning environment and scaffolding methods as reported from a study on project based learning with middle school and college students (Hae Deok Song et al. 2006). Cowan’s 1998 three part model of reflection for, in, and on action shows the learning process as an overstretched spring than a cycle (Belton, Valerie et al. 2006). Typically facilitators model it and engage students in discussion or dialogue or students are asked to complete self-assessments or it is simplified to a design process consisting of activities and checklists (Reymen, Isabelle. 2001) or it is proposed as a conceptual model to guide and promote reflective design thinking (Hong, Yi-Chun & Choi, Ikseon. 2011). But it is not the same as a review process, it is usually not structured and not many tools and frameworks have been proposed for design practice as an independent personal process. So, this research attempts to pilot a framework based on Indian traditional thought for reflective design practice in studios.

4. RESEARCH METHOD

Studio units are learning spaces in Srishti Institute of Art Design and Technology where students develop core disciplinary skills and knowledge, while navigating a trans-disciplinary environment. The two studio units (30 credit hours each), from Business Services and System Design (BSSD) major considered for this research were “Systems – A Macro to Micro Look” and “How Systems Work or Fail – case studies”. Abstracts of these units are below,

4.1. Systems: a macro to micro look:

To understand the complex nature of systems and to know how macro factors in the economy, ecology and culture triad inform the Product-Service System Design for Sustainability at a micro level. What determines limits in the natural world, in economic systems and in social systems? Why is it important to think about the future? What is your responsibility to yourself, your community, and the world?

4.2. How systems work or fail – case studies:

For anyone who designs, builds or maintains systems of any kind critical issues like quality and reliability and sustainability need to be addressed during the design stage itself. Learn from best practice case studies of system design in the areas of economy (example “Mumbai dabbawallahs”), ecology (example “Navdanya organic farming”), and culture (example “slow food movement”).

Each unit constituted a set of learning experiences and instructions including best practice system design case studies broadly around three themes for sustainable design – economy, ecology, and culture. Students produced acceptable evidences of their learning either through group work or individual study at three assessment intervals culminating in a final Product-Service System Design for Sustainability in one chosen area of the UN’s Sustainable Development Goals. These evidences were produced through open-ended, complex, and authentic performance tasks and design challenges to demonstrate four learning areas based on the UNESCO model – learning to know, learning to do, learning to live together, and learning to be. Individual differences and individual choices were welcomed and respected by the faculty. It accommodated self-paced, self-directed, contextual, and multi-disciplinary learning. A student was given time and space for reflection.

For the specific reflective design competency called “Learning to be”, students were assessed on learning to judge one’s own work and working process, and the work of others in relation to the standards of the field. Students chose two best practice Product-Service System Design for Sustainability case studies to reflect on per week over a five-week unit. These were drawn from a variety of videos, talks, books, and articles. The weekly assignment was to record individual reflections in a concise manner in one or two pages. They were given a framework for reflection with five layered open-ended questions to record intrapersonal outcomes going from the outside to the inside, from the specific to the general, from what they observed with their five senses to what they would envision as an ideal situation for that specific system.

Basic elements of the research method:

- Use five-layer design reflection framework
- Evaluate best practice case studies and examples
- Map affinity diagram from design reflections of students
- Analyse design principles and priorities for Product-Service System Design for Sustainability

The design reflection framework sought responses to five open-ended questions about the design to describe physical observations, identify causal factors, record felt emotions, make conscious decisions and imagine ideal situation. The intent was to go sequentially from the external to the internal, from the specific to the general while mimicking the natural thinking process according to traditional Indian thought. The conscious decisions and ideal future situation together could motivate a designer to look for ways to continuously improve the design further.

- Be true to your roots – localisation, decentralisation, fair-trade, intercultural exchanges, local culture, pooling knowledge.
- Embrace inner transformation and design for generosity – empowerment, happiness, satisfaction

This framework is transferable to other disciplines also. For example, in Public Space Design (PSD) in a 5-week design studio unit on participatory planning (with 11 post-graduate students, 5 design reflections each and site visit observations), for the key issue of “How to reimagine Bangalore Central University campus as an urban commons?”, six design themes emerged,

- Conserve and integrate buildings in the heritage zone;
- Demonstrate energy efficient design of spaces;
- Upgrade amenities for better user experience;
- Enhance learning experience of the university network;
- Enable fluidity and accessibility between campuses;
- Bring in belongingness and attract diverse audience.

This is a prioritised list after a pair-wise comparison exercise. It gave students relative weightage of the six themes with corresponding focus areas to detail and enhance further.

6. IMPACTS ON SUSTAINABILITY

Reflective thinking in students enables them to become lifelong learners. This paper presents a framework for reflective design practice based on traditional Indian thought attempted for the first time in Srishti Institute of Art Design and Technology. It is a transferable framework that could work with students across institutions, across geographies and across sustainable design issues. It allows faculty and students to apply this framework and navigate through design for Product-Service System Design for Sustainability which many programmes are lacking in. It fosters a distinctive practice in sustainable design among design practitioners with deeply entrenched values, ethics, and morals emerging from a reflective design practice.

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