

CULTIVATING CREATIVITY THROUGH EMPATHIZING: AN EMPATHY FOCUSED FRAMEWORK IN DESIGN STUDIO TEACHING

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Abstract: Empathy development has been recognized, discussed and implemented in design practice for more than 20 years. Although empathy is also addressed in design education, the understanding of its potential impact on students' creativity and the depth of its application are limited. Empathy development is often seen as a part of the early stage of a project research, but not a main thread weaving through the whole design process, nor as the main mechanism contributing to students' creative performance. A strategic planning process for empathy building in project driven studio teaching is also rarely elaborated. Through a brief review of how empathic research has evolved in design, this paper proposes an empathy focused framework in a design studio teaching context. A case study was described and analyzed to demonstrate the effectiveness of such a framework in a studio to cultivate students' creativity.

Keywords: empathy, creativity, empathic design

1. INTRODUCTION

Empathy is an ability to sense, experience, understand, and share the feelings of others. Empathy was first recognized as an important subject in psychology in the late nineteenth century, developed in the twentieth century (Kouprie, & Visser, 2009). Empathy is generally considered and studied in two types in psychology: cognitive empathy and emotional empathy. Cognitive empathy is about the ability to recognize and understand other people's feeling. Emotional empathy is about the ability to respond with an appropriate emotion to another's feeling. Developing empathy helps someone to gain a deeper understanding of another person's inner emotional world (Gloeman, 2005). Psychological studies about empathy explore people's emotional reasoning behind their behavior and expose a connection between people's empathy and motivation which influences people's creative performance (Kelley, & Kelley, 2015).

1.1. EMPATHY IN DESIGN PRACTICE

Empathy application in design quickly evolved in the late 1990s when understanding and translating user's emotion and experience into design were recognized and appeared in the business literature as a culture shift (Koskinen, Battarbee, & Mattelmäki, 2003). Empathy in design is about knowing and caring people, the end users' physical and emotional needs. In a general view in practice, "empathy develops through a process of interacting with people in which the focus is on both peoples' explicit and implicit needs" (Rauth, Köppen, Jobst, & Meinel, 2010; Lande 2010).

Developing empathy started playing an important role when human-centered design process was widely recognized and applied in design practice. "Empathy is at the heart of design. Without the understanding of what others see, feel, and experience, the design is a pointless task." (Brown, 2009). In new product development, the empathic research and design approach is considered most valuable in the early

stages, when product opportunities are less clear (Mattelmäki, Vaajakallio, & Koskinen, 2014). In a study by Dorothy Leonard and Jeffrey Rayport published in Harvard Business Review, the process of empathic research was summarized in four phases: observation, capturing data, reflection and analysis, and developing solutions (Leonard, & Rayport, 1997). Following this structure, under each phase, methods and tools have been explored and applied to assist design researchers and designers in inquiring activities in the real world.

1.2. EMPATHY SPARKS INNOVATION

Through practices, practitioners have started to experience that empathy makes a substantial contribution to the creative process of design. “Research shows that when we are empathetic in a design process, our ability to receive and process information is enhanced” (Battarbee, Suri, & Howard, 2014). Through an empathizing process, designers and researchers will likely to develop greater insight and understanding about the user and the issues, thus supporting more sensible and innovative design outcomes (Thomas, & McDonough, 2013). Since empathy building process draws on information about the users’ everyday life, the process and outcome bring designers into people’s life which sparks for innovation (Postma, Lauche, & Stappers, 2012).

In the book by Koskinen, Battarbee, and Mattelmäki, “*Empathy Design: user experience in product design*”, the authors talked about immersing into the role of the end users is inevitable in an empathizing process and such immersion constantly inspires the practitioners.

In empathic design, the designer has to go through some degree of role immersion, and an attempt to seriously keep the data-inspired imagination in check with empirical data. Research inevitably inspires the designer, but the research creates more than inspiration: it also creates an empathic understanding that helps the designer to choose between hunches and concepts (Koskinen, Mattelmäki, & Battarbee, 2003).

In terms of empathy practicing principles, Leonard and Rayport suggested that empathic design would especially entail techniques that require unusual collaborative skills, “open-mindedness, observational skills, and curiosity,” and the use of visual information (Leonard, & Rayport, 1997). The suggested mindset of combining subjective and objective approaches in field studies was adopted and elaborated by other practitioners and researchers.

1.3 EMPATHY IN DESIGN EDUCATION

In more than two decades, developing empathy has evolved as one of the main approaches in design research practice. In design education, the empathy concept was introduced to the design program more than 15 years ago. A variety of empathizing processes and models were developed and applied in students’ learning (Mattelmäki, Vaajakallio, & Koskinen, 2014). Empathy building was also considered and explored as one of the basic principles of design thinking training to cultivate students’ creativity (Rauth, Köppen, Jobst, & Meinel, 2010; Lande, 2009).

Currently, empathy development is often applied at the early stage of research in studio teaching but is less addressed in concept and design development phases after the initial research. Another important component in empathy is to building in-person experience with the end user. This is often compromised in studio teaching due to limits of time and other resources. Although empathic tools and techniques were presented in design teaching, they were described at a general level, and “little argumentation was given

for those wishing to apply these techniques” (Kouprie, & Visser, 2009). There is a lack of discussion about how to utilize empathy building systematically to inspire students in a studio teaching environment. How instructors can design the course deliberately to foster a studio culture that facilitates an empathy building process is also missing.

This paper proposes an exploratory framework for a studio teaching with an emphasis on developing students’ empathy as the main mechanism in cultivating students’ creativity. Applicable empathic techniques are recommended to immerse students in the subject and related context through the whole project. A case study was described and analyzed to demonstrate the effectiveness of such a framework. The study shows a clear connection between enriched empathizing processes and students’ creative performance.

2. AN EMPATHY CENTRED PROCESS

More than a century ago, John Milton Gregory affirmed the essence of effective teaching is about motivating students to learn. “The true function of the teacher is to create the most favorable conditions for self-learning... true teaching is not that which gives knowledge, but that which stimulates pupils to gain it.” (Gregory, 2015). An empathy-centered process is a way to create such a condition for students to learn. David Kelly claimed that “To inspire human-centered innovation, empathy is our reliable, go-to resource. We find that connecting with the needs, desires, and motivations of real people helps to inspire and provoke fresh ideas.” (Kelly, & Kelly, 2015).

A framework is proposed for design studio teaching in Table 1 to integrate empathic research and design as a core component of teaching and learning through the whole project. As David addressed that inspiration is fueled with “a deliberate, planned course of action” (Kelly, & Kelly, 2015), this framework emphasizes students’ engagement and learning through a series of activities. The design process is generalized in four phases: discovery research, concept generation, concept testing, and design development. In each phase, a set of applicable empathy building techniques is listed as a reference for the application. Most of these methods are commonly used in design practice and some are referenced from *the Universal Methods of Design* (Martin, & Hanington, 2012). Although the process is laid out in four phases, there should not be clear boundaries between phase to phase developments in reality. The design process can become sophisticated in unique subjects. Each phase possibly overlaps with adjacent phases. Accordingly, some techniques can be applied in more than one phase, but not restricted to a certain time.

Design Process	Empathy Focused Process
Phase 1: Discovery Research	Empathy initialization: Connect students to the subject, the user, and the context. Referencing activities: Observation: participant observation, user artifacts study, user behavior study, user shadowing, ethnography study, diary study, and etc. Communication: talk to the user, interview, survey, storytelling, focus-group discussion and etc.
Phase 2:	Deepen the empathy: Living user’s life, sensing user’s world.

Concept Generation	Referencing activities: Immersive learning: role-playing, body-storming, design workshop, experience prototyping, Personas building, and etc.
Phase 3: Concept Testing	Empathy reinforcement: the emotional bonding with the end user. Referencing activities: Immersive testing: functional simulation, self-testing, discussion with the users during testing, and etc.
Phase 4: Design Development	Sustain the empathy: an empathic culture in the studio. Referencing activities: Experience sharing: story-sharing among teams of students, on-site testing with the users, in-depth discussion, and etc.

Figure 1. An empathy focused process in a studio teaching.

At the beginning, the course design focuses on assisting students to make direct contacts to the user and the subject via appropriate venues. The planning with external parties or partners can be time-consuming. In order to run an efficient process, most of the planning should take place beforehand. In the meantime, empathic research techniques will be introduced to students through mock practices by student teams. Ways of observation and communication are typically applied at this stage. The extensive in-person study is indispensable in this phase. The focus is to put students in the real context and interact with real users. At the end of phase 1, students should have focused on one particular subject or a direction through a general study on a number of issues.

In phase 2, the focus of the course design is to provide more opportunities to immerse students into the user's living context and become users. To generate initial concepts for design, students will step further into the users' world through activities such as role-playing, body-storming, experience prototyping, and etc. Students will deepen their cognitive and affective empathy through the process.

In phase 3, students' promising concepts will be quickly developed into prototypes for testing. Through iterations of functional prototypes, students are required to test their prototypes with the end user and other stakeholders directly to collect their feedbacks. Depending on the subject matter and institutional compliances to the human subject related testing, some projects might not be allowed to conduct direct user testing. In this case, simulation and indirect testing need to be performed associated with end user discussions. Through this process, students will reinforce their connection with the user, and deepen their understanding of the targeting subject.

In phase 4, students' empathy is a reflection for deeper meaning search. Fostering an empathic culture in their studio environment will help them to sustain their empathic mind. Students should be encouraged to surround them with related 2D, 3D samples collected through the process, or any other related inspirational mediums such as sound, music, video, and etc. After the functional testing, it is often a time to define and develop the visual language. Students are organized into teams to share and discuss their projects and insights. A stimulating environment will support students to be inspired continually by their empathic base. It will lead students to refer back to the users' life, interest, and emotional callings, and guide them to define the appropriate visual language.

This empathic activity filled process provides more opportunities, time and space for students to immerse in the subject and be more inspired through the project. This framework is an accumulative work of years of studio teaching. As a case study, a senior studio project was described and analyzed in this paper as an evaluation of the effectiveness of the empathy-centered teaching framework.

3. CASE STUDY

This project was designed for senior students to explore and learn about design for an aging population. It was designed as an 11-week long project with adequate time allocated for research and empathy development. There were 15 students in this studio. During the discovery research, students were divided into 3-student teams and sent out to local senior living communities to connect with the older adults. Each team member was designated to unique tasks including interacting with the participants, taking notes, documenting in photos or videos, and etc. Students applied observation and communication techniques taught in the studio to connect with their users. Some activities are highlighted in figure 2. A team of students followed their targeting group of seniors to a shopping center and shadowed them through shopping. When they saw some seniors were constantly challenged by reaching objects and getting their access to goods, they started helping them through shopping (figure 2, 1). This kind of interactions allowed students to experience the user's challenges in person and stimulated the development of emotional empathy. Another student focused on interventional treatments in hand therapy. To drill deeper in the users' challenges, he immersed himself in specific types of hand and finger postures in conducting daily living tasks (figure 2, 2). This exercise helped him not only gain a better understanding of hand's anatomy and movements but deepen his empathy to feel the users' pain in losing these abilities. Another team of students organized a design workshop with their targeting seniors in a local independent living center during the residents' activity time (figure 2, 3). In addition to surveys and group activities, they had opportunities to help the participants hand in hand in some physical activities. During these activities, students had opportunities to immerse themselves in the users' world. Some of them made friends with their participants and continued discussions and interactions through additional visits and phone calls. By means of developing a relationship at an individual level with personal story sharing, students obtained more insights about their emotional deficiencies and needs.



Figure 2. Developing empathy through the discovery research process.

At the early stage, students were overwhelmed by so many problems the users encountered. Then based on their unique study and empathy, every student was guided to focus on one prominent issue. These

issues covered a wide range of aging-related problems including mobility limitations, depression, occupational therapeutic devices, vision, arthritic challenges, falling, and etc. Students became knowledgeable in their focused study and more compassionate to help through design. To reinforce their empathy, students were encouraged to continually collect feedbacks from their end users through sharing their design concepts in sketches and quick mock-ups. Then iterations of functional models were developed and tested by students and their team members. Fully functional appearance models were developed at the end of the project.

Three projects are shown in figure 3 representing the course outcome. With a focused study on hand therapeutic activities, Cody Blazek developed a user-friendly therapeutic hand training system (figure 3, 1). His study showed most hand training tools were designed with little consideration of user engagement. Users had a low interest to engage with these tools, which contributed to a poor performance measure. His system was designed with a focus on the users' emotional stimulation inspired by his empathic understanding. The system provided a size friendly structure with six changeable sides. Each side provided a unique interaction offering a distinctive tactile sensation to the user. A positive response was shown through users' engagement in the initial user testing. Andrea Nova studied the range of motion (ROM) arc, a classic device used for the treatment of limited upper extremity movements. The original arc was simple, easy to use, and flexible. But the design had little concern about the users' emotional motivation in terms of physical design and interaction design. Users were reluctant to engage their practices due to a stigma associated with the device. Andrea proposed a design with an integrated LED lighting experience. The user interacted with the LED lighting in the arc tube by gliding the hand controller (figure 5, 2). In initial user testing, the overall design and meaningful user interaction were well received by the users. Yen Lee's design Uplift was a result of her direct experience in seniors' shopping process. She deeply felt the challenges facing the seniors through shopping and saw many limitations of the traditional shopping cart. Her proposal was a lightweight folding cart that could be easily maneuvered around the shopping center, shoved into the car trunk, and pushed into the home directly. Her empathic mind motivated her to minimize the users' effort through every step of the shopping process. Her insightful discovery in this subject and sensible design concept were recognized by an international design award as the best of the best in students' concepts.



Figure 3. Selected students' design concepts.

3.1 DISCUSSION

Student's course evaluation indicated a positively enriched learning experience through the project. A group discussion was arranged after the project to collect more detailed feedbacks. All students engaged in the continuing conversation with an open and reflective mind about their learning experience. In these discussions, some deeper thoughts were uncovered. The key responses from these discussions are summarized as follows.

1. Students felt more inspired in this project through the empathy-centered process.
 - The immersion in the users' world through empathic research helped them to not only see the problem closely in details but also feel the users' pains. Experiences, meaningful practices, and emotions connect them to innovative ideas.
 - Many ideas were generated naturally through the process and contributed to the final designs.
2. Students confirmed that they gained a much deeper understanding about their users through in-person research activities.
 - Through conversation and storytelling during research, students learned not only their pains in dealing with challenges but their desires to be independent.
3. Students acknowledged that they were more motivated in this project once they established a 'relationship' with their users.
 - Some students kept a continued communication with their research participants through the project. They were more compelled to work hard to help them by solving their problems.
4. Most of the students felt it was challenging to narrow down their focus on a key issue.
 - They were overwhelmed by many problems uncovered through the discovery research.
 - Every real world problem was complex with intricate causes. It was challenging for students to deal with some complex issues such as depression and etc.
5. Students suggested being sensitive to select and define the problem for students to ensure a meaningful learning result.
 - Some problems were too complex to be solved with a tested design concept within a studio context. Students needed more guidance in decision making in terms of determining the depth and the amount of work of their subjects.
6. An empathic environment in a studio was very helpful for idea sharing and design development.
 - A supportive environment helped students to bounce their ideas off with others who share the same feeling and values. Their feedbacks were sensible and insightful.

4. CONCLUSION

This article has presented an empathy focused studio teaching framework. It is based on the theoretical correlation between empathy and creativity in psychology. It is inspired by and developed from empathic applications in design practice. Through an empathy focused studio teaching structure, students are immersed in the users' world from the beginning to the end of the project. In a relatively longer immersion students are likely to be more inspired thus be more creative. The case study showed a closer connection between the students and the user which became a strong motivator to students through learning, designing and testing. In addition, students experienced and learned an effective way of problem-finding and problem-solving. The empathy-focused process directed them to the key issues naturally. By gaining direct feedbacks from the end users through in-person interviewing and testing, students became more

comfortable and confident in proposing their solutions. The immersive inquiry process transformed them into the end users and experts of the subject.

On the other side, it is not an easy task to develop such a studio. It demands extensive planning and coordination of resources beyond the classroom. It would not be an effective studio without taking students outside the studio. They must connect with and immerse themselves into the real world. The intent of this article is to call for a continued discussion and exploration about the empathy focused teaching to cultivate student's creativity in an expanded studio environment.

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