

INTEGRATING A MULTIDISCIPLINARY DESIGN METHODS MINDSET INTO CLASSROOM PRACTICE

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ABSTRACT

Sanders and Stappers (2013) propose a new interpretation of design disciplines that is not delineated by traditional fields such as industrial design, graphic design, or architecture, but by themes focusing on “people in the context of their lives” such as design for sustainability and design for well-being. Howell, Stark, et al (2016) teaches that multiple design fields may be employed in tandem to explore human centered design projects. This mindset allows for more holistic design solutions. When students are introduced to this framework, they are opened up to more flexibility in their design process and potential solutions.

This paper outlines an industrial design student’s self-directed thesis project on encouraging self-compassionate thought patterns. We will examine how the process was affected by viewing the project as a multidisciplinary design field challenge instead of a traditional form, color and material-driven industrial design challenge. Importantly, the paper will discuss how research and design methods from industrial design, graphic design, interaction design, storytelling, and psychological science played into the creation of a meaningful designed project and experience.

The paper concludes with several suggestions for integrating multidisciplinary design methods into classroom practice.

Keywords: Holistic design, experience design, interdisciplinary design, design thinking, human centered design.

1 INTRODUCTION

Sanders and Stappers [1] propose a new interpretation of design disciplines that is not delineated by traditional fields such as industrial design, graphic design, or architecture, but by themes focusing on “people in the context of their lives,” such as design for sustainability and design for well-being.

Howell, Stark, et al [2] [8] teaches that multiple design fields may be employed in tandem to explore human-centered narrative-driven design projects. This mindset allows for more holistic design solutions. When students are introduced to this flexible framework, they are opened up to more flexibility in their design process and potential solutions. This multidisciplinary design methods mindset is reflected in the professional design world, where interdisciplinary teams are increasingly common [3].

However, design education continues to emphasize siloed design programs that emphasize one field without addressing how it fits into a larger picture [3]. For example, design programs at Brigham Young University (BYU) are split between different colleges, with graphic design residing under the college of fine arts and industrial design within the college of engineering. Design Academy Eindhoven is a notable exception, which offers programs such as Man and Mobility, Man and Identity, and Man and Leisure that demonstrates the viability of teaching students from a multidisciplinary perspective. It is beneficial for students to be exposed to interdisciplinary design methods to facilitate their transition to the professional world and to empower them to solve the increasingly complex and systematic problems designers are tasked with today.

The duration of this paper will discuss the first author’s bachelor thesis project and how an openness to multidisciplinary design methods influenced her research and exploration, and how this multidisciplinary was realized within her final solution.

2 STUDENT PROJECT

In the Industrial Design program at BYU, the bachelor thesis is a self-directed eight-month engagement. Each student explores a problem of their choosing. In recent years, these design projects have extended beyond traditional industrial design challenges focusing on form, color and material to include a wider range of solutions, such as designed apps, services, and experiences. For example, one student engaged in a critical design project satirizing non-critical conformity to trends. Students have drawn inspiration from interaction design, graphic design, experience design, and service design. This is likely the result of the necessity for holistic solutions in the current design world [4], and more specifically the outcome of previous projects in BYU's Industrial Design program that encourage multidisciplinary design solutions [2].

2.1 Research and Exploration

For her thesis project, the first author chose to explore how design can encourage growth and self-improvement. She discovered a psychological concept called self-compassion, a conception of 'self' pioneered by Dr. Kristin Neff [5] Self-compassion entails treating yourself with the same kindness you would treat a close friend. It is built on three dimensions:

- 1) Self-kindness or not being overly critical or harsh towards oneself.
- 2) Mindfulness or acknowledging both good and bad emotions as they are, without overemphasizing or repressing one's emotions.
- 3) Common humanity or seeing one's experience as part of the greater human experience and recognizing that other people also struggle in their lives.

The end goal for this project was to increase well-being in participants by helping them reframe self-deprecating and negative thought patterns and to become more self-compassionate. Because this is a highly cerebral journey, it was important to keep all avenues open while exploring potential design directions. What if the best solution was not found in a physical product, but in an app, an experience, a service, or a physical space? The multidisciplinary design approach could lead to solutions that were not possible in a traditional industrial design exercise.

She began her project by addressing several design disciplines simultaneously; specifically, design research and industrial design. From a design research perspective, she studied scholarly articles about self-compassion and related topics to understand the science behind it. She interviewed a practicing therapist about self-compassion and cognitive behavioral therapy. She also interviewed several potential users of the product: young people who have overcome or were in the process of overcoming mental health challenges. From these activities, she gained an understanding of the real-world science behind the problem, and synthesized several themes and key insights that directed future design decisions. These key insights include:

- The presentation must be fresh and modern to avoid the stigma of self-help books.
- Long-term engagement is necessary to change thought patterns.
- Providing a "roadmap" engenders confidence in effectiveness.
- Associated physical objects take on symbolic meaning.
- Low barrier to entry is necessary, especially for those with depression.
- Value in reaching out to others while improving yourself.
- Value in making intangible thoughts and feelings tangible.
- Intrinsic motivation is more important than reminders.

To facilitate a multidisciplinary design approach, these key insights were phrased in general terms so they were applicable to multiple design disciplines. In addition, they were considered throughout the project, sometimes supported by additional research activities, whenever design decisions needed to be made. For example, the insight about providing a roadmap heavily influenced the way information was structured in the final solution. For example, the insight to provide a low barrier to entry strongly influenced the visual style in the final solution, which emphasized white space.

In tandem with these design research activities, she created multiple concrete physical experiments, drawing mainly from an industrial design perspective. For example, to explore the importance of physicality to "ground" people suffering from anxiety, she created a textured wooden phone case and several textured wooden rings (Figure 1) that she gave to participants to use for a week to test the influence of symbolic objects. Another example was to give cloth voodoo dolls to several participants and instruct them to embroider a face onto it. They were then to spend a week speaking to the doll dai-

ly as if they were speaking to themselves, to see if it would increase their self-compassion. This tested the effects of co-creation and symbolic objects (Figure 2), notions drawn from research and conceptual design fields as well as psychology. These artifacts were used as culture probes to provoke users and generate further insights, demonstrating how multidisciplinary design methods can work in parallel to increase the effectiveness of each.



Figure 1. Textured wooden phone case & rings

Figure 2. "Voodoo dolls" used as a cultural probe

The designer then created prototypes for six concepts that could potentially establish a final design direction. She purposely pursued solutions in disparate directions (physical, digital, service) in order to "leave no stone unturned" as to what might be the most effective designed solution. Consequently, her prototypes intentionally spanned a broad range of design disciplines. These included a subscription service for desk toys that encourage self-compassion (industrial design, service design), an app that helps you log your emotions (interaction design), to an interactive journal that helps the user reframe their thoughts (graphic design, storytelling) (Figures 3-4). In line with Sanders and Stappers' multidisciplinary design approach [1], these concepts leverage multiple design disciplines in service of the ultimate goal, which is to increase self-compassion in users.

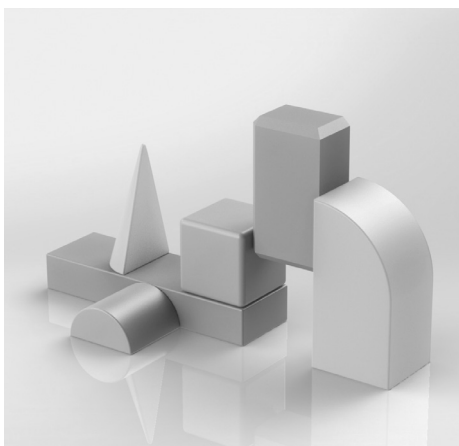


Figure 3. Self-compassion subscription service (industrial design, service design)

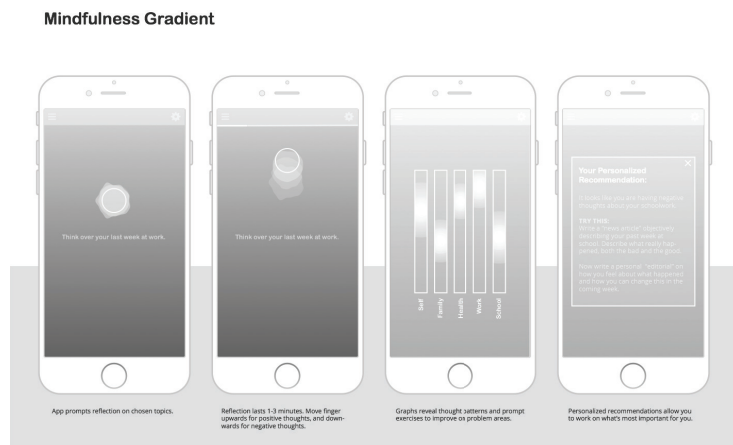


Figure 4. Emotion logging app (interaction design)

2.2 Final Solution

The student chose the interactive journal as her final design direction because it tested well with users and because it fulfilled several of the aforementioned key insights, such as the necessity of long-term engagement and the importance of physicality. This journal is a series of simple, concrete, creative exercises that are designed to challenge existing thought patterns and encourage the three dimensions of self-compassion (self-kindness, mindfulness, and common humanity). As the participant completes these exercises over time, he or she increases in self-compassion and comes away with a healthier conception of self (Figure 5-6). The final outcome is a 127 page journal with 50 short, concrete exercises designed to increase self-compassion, to be done at the user's own pace.

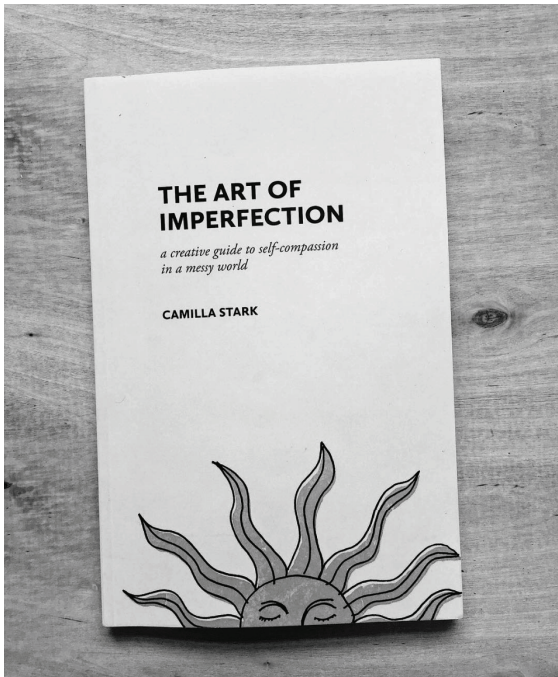


Figure 5. Front cover of final book design



Figure 6. An example page of the book

The outcome of this design concept demonstrates the realization of a multidisciplinary design mindset. It contains elements and insight from graphic design, interaction design, storytelling, and psychology. Each of these elements was thoughtfully designed according to the key insights uncovered in the research phase of the project. For example, the insight about providing a roadmap drove the overall structure of the book and how that structure was communicated. At the most obvious level, the visual design of the book is a graphic design and illustration exercise. It was important that the graphic style effectively communicate the tone and purpose of the book without falling into the traditional “self-help book” style. To verify the design communicated effectively, several user tests on tone of voice and branding direction were performed.

Though the book is a strictly analog product, the student also drew inspiration from interaction design; specifically, the idea of onboarding and the user experience journey. The first several pages of the book were carefully designed to engage the user and explain the proper use of the book, similar to an app onboarding. The overall structure of the book, including the onboarding, was designed to follow the Hero's Journey [7]. This demonstrates additional consideration for storytelling and crafting a cohesive product story, an important part of any design process.

This effort is still a work in progress and its impact and effectiveness remain to be seen. However, in multiple user tests of the prototypes, users seem to be responding well to the product and it is accomplishing its goal of encouraging self-compassionate thought patterns in the user.

It is important to remember that this book—a cross between research, graphic design, interaction design, and storytelling—could not have come about by looking at the design challenge strictly from an industrial design perspective. Instead of focusing on form, color, materials, finish, and manufacturing,

the broader human experience was considered and designed for. This was only possible because the student intentionally worked with a multidisciplinary focus throughout the process. Whether it was the broad range of initial prototypes or the multidisciplinary elements of the final solution, she chose to consider many design disciplines at every step. This was done with the belief that narrowly focusing on one category of solution can limit the designer from truly designing the best solution to a challenge. By considering a broad range of disciplines, the designer may find valuable inspiration outside their primary discipline.

3 CONCLUSION

There are several methods to encourage design students to take a multidisciplinary design approach. Students should be exposed to examples of holistic design solutions that solved a problem through several angles. One example is Innova Schools, a project done by IDEO's Design for Learning studio. In order to create a scalable private school system for the middle class in Peru, every aspect of the school experience was carefully designed, from the architecture to the curriculum to how technology was used in the classroom to the school uniforms [6]. Projects like this demonstrate how many design fields must come together to solve big problems, and will inspire students to look beyond their own discipline when designing.

Professors can provide a class that simulates the multidisciplinary teams of professional designers by bringing together industrial designers, interaction designers, graphic designers, and engineers to work towards a common goal. The team may even be stretched to include broader disciplines, such as biology, food science, psychology, or the humanities, depending on the project. Not only will these students learn to view a design challenge more flexibly, but they will also be more prepared for the multidisciplinary environment in the professional world.

Another option would be to follow the process shown in the above student project. Begin with a broad, intangible design challenge, such as how to increase self-compassion or how to reduce food waste. Give the students several weeks for various research activities, such as user interviews, expert interviews, analogous experiences, etc. Then ask the students to create multiple concepts for potential solutions to the problem, each one drawing from a different design discipline. For example, one industrial design concept, one interaction design concept, one service design concept, and one environment design concept. You may find it useful to give a brief introduction on each of the disciplines so the students become more familiar with them. This type of project will teach the students that there are many legitimate ways to research, frame and solve a problem, and that the best solutions often combine several disciplines.

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