

# **Developing Social Empathy through Human-Centered Design: The Iterative Journey of Designing an Instructional Booklet for Pre-Service Teachers**

Carrie L. James, Saadeddine Shehab, Gail Rost  
cljames2@illinois.edu, shehab2@illinois.edu, gailrost@illinois.edu  
University of Illinois Urbana-Champaign

**Abstract:** A critical goal of teacher preparation programs is to support pre-service teachers (PSTs) in understanding their future students and communities. One way to do this is by assisting PSTs in developing social empathy. This paper describes the design and implementation journey of three prototypes of a social justice in education instructional booklet that aims to engage PSTs in developing their social empathy through human-centered design (HCD) processes that aim to help them understand people from varied backgrounds and their unmet needs. Our prototypes were informed by a conceptualization of social empathy that encourages PSTs to understand people who come from different social backgrounds and findings from research that define concrete techniques to empathize with the users. We discuss the design and implementation of the fourth prototype of this booklet and propose a study to evaluate the impact of the booklet on PST's development of social empathy.

**Keywords:** human-centered design, social empathy, culturally responsive, teacher education

## **Introduction**

In culturally responsive teaching, teachers embrace students' diverse "cultural knowledge, prior experiences, frames of reference, and performance styles ... to make learning encounters more relevant to and effective for them," (Gay, 2010, p. 29). While pre-service teachers (PSTs) may come in with a desire to support diverse students, effectively preparing them to do so starts by fostering their development of social empathy – empathy for those outside your own group identity (Segal, 2011). Social empathy, paired with a clear understanding of social justice and culturally responsive pedagogy, allows teachers to embrace their students' funds of knowledge (Gonzalez, et al., 1995). Nevertheless, our knowledge of pedagogical approaches that can engage PSTs in learning experiences where they practice and develop social empathy is limited.

One potential pedagogical approach is to engage PSTs in human-centered design (HCD), a problem-solving approach that identifies the unmet needs of a population to collaboratively and iteratively develop solutions (Brown, 2008). Research shows that when educators explicitly engage learners in HCD, they develop several mindsets including human-centeredness (Goldman & Kabayadondo, 2017). Social empathy, a component of this mindset, manifests when people "begin to move beyond egocentric views of the world and no longer design based on their own needs, desires, experiences or preferences" (Goldman et al., 2012 p. 17). HCD fosters the development of this mindset by having people actively engage in empathic techniques (Hess & Fila, 2016) such as being immersed in a person's world, interacting with them in interviews, and reflecting on their perspectives.

Considering the capability of HCD experiences to assist learners in developing social empathy, this paper addresses the question of how we might engage PSTs at an historically white institution (Dancy, 2018) in HCD experiences that assist them in developing their ability to empathically understand their students and communities. The paper describes the design and implementation of an instructional booklet that aimed to engage PSTs in empathic moves, as part of HCD, to complete a community placement assignment in an introductory social justice in education course at a land-grant institution in the Midwest. The booklet takes us one step further toward supporting PSTs in practicing social empathy and addresses the need in the field of teacher education to support PSTs in developing human-centered mindsets so they can better serve their future students and communities.

## **Conceptual framework**

Research on empathy is grounded in the fields of social work and psychology. Segal et al. (2017) define empathy as a cognitive-affective construct. "Affective empathy describes the physiological aspects of vicariously feeling what another person is feeling, while cognitive empathy involves the mental processing of another's feelings, thoughts, or intentions" (p. 11). Segal et al. label this interpersonal empathy. It includes taking the perspective of others while maintaining self-other awareness and regulating one's own emotions. Interpersonal empathy is the basis for social empathy, which is the ability to understand people by perceiving or experiencing their life

situations and as a result gain insight into structural inequalities and disparities” (Segal, 2011, p. 266-267). They described social empathy as having both a macro self-other awareness and macro perspective-taking ability that tasks us with understanding people different from ourselves “by putting ourselves in the situations of others with different characteristics of group identity, such as race, gender, sexual orientation, ability, age, and class background” (p. 27). Social empathy responds to the systemic barriers affecting people in marginalized groups.

In the context of HCD, designers use social empathy to truly understand those for whom they design. Hess and Fila (2016) highlighted this in examining how undergraduate engineering students engaged in empathic techniques as they engaged in HCD to design an accessible zipline experience for youth campers with disabilities. These undergraduates demonstrated 12 empathic techniques: direct observation, empathy by proxy, interaction, projection, empathic concern, synthesizing empathic knowledge, design for user-centered criteria, integration, refine user suggestions, check with user, and imagined use. These empathic techniques support the authors’ conceptualization of empathy, which is similar to Segal et al. (2017). Their model explicitly addresses a self-other dimension. They described this dimension as being a dichotomy where people are “imagining how another feels or thinks” or “imagining how one would think and feel in another’s situation” (p. 94). This emphasis on self-other awareness aligns with the characteristics present in both a human-centered mindset and HCD. Finally, the concept of social empathy, in the context of HCD, is not complete without the ethical perspective (Boylston, 2019; Segal, 2018) that urges designers to take on the role of creating socio-cultural solutions by being aware of their ethical obligations (Manzini, 2015; Reznick, 2019) and setting aside biases and assumptions. The ethical component challenges those using HCD to question who the best person(s) is to respond to the unmet needs faced by others.

PSTs are the future designers of learning experiences for students from diverse backgrounds. Therefore, it is important that PSTs develop social empathy during their teacher preparation programs so they can better understand, support, and include their future students and communities in their instructional designs, especially when the majority are white. For example, PSTs must examine the biases they bring to designing innovative learning experiences, particularly for those in marginalized populations. Without this step, their concern for social justice issues will be hindered by the simple fact they may be designing from biased perspectives. Engaging PSTs in HCD experiences, specifically the empathic techniques identified by Hess and Fila (2016), may assist them in developing social empathy. Nevertheless, we still lack research-informed instructional tools that can engage PSTs in learning about and implementing these techniques to recognize, develop, and practice social empathy.

## **Design solution**

To support PSTs in developing social empathy, we co-designed an instructional booklet that guides PSTs in implementing the processes of the Understand, Synthesize, and Ideate spaces of the HCD taxonomy (Lawrence et al., 2021) with instructors and teaching assistants (TAs) of a social justice in education course. The activities in the booklet specifically engaged PSTs in exploring and observing an educational setting, empathizing with the stakeholders in the setting, reflecting on their biases, organizing collected information, identifying patterns, defining design opportunities, and suggesting potential solutions. These activities provided explicit experiences and instruction that align with five of the 12 empathic techniques identified by Hess and Fila (2016) (see Table 1). In their research, they determined that students participating in an immersive HCD experience were able to demonstrate these empathic techniques because they actively interacted with actual users as part of the service-learning opportunity. While their research focused on what they observed, we took their work further by designing specific activities that explicitly engage students in each of these techniques both in theoretical and practical ways. Our goal is to further develop PSTs social empathy by explicitly engaging them in these techniques as they navigate through HCD, so they better understand their stakeholders and determine their unmet needs.

## **Iterative design process**

### **First iteration: Spring 2019 and Fall 2019**

The introductory social justice in education course is a required course for future PSTs that focuses on identity and difference. This course has three central components: course lectures, teaching assistant-led discussion sessions, and a community placement experience where PSTs are required to visit and engage in an educational setting to apply the course content to explore, and understand the setting, and reflect on their experiences in the setting. Prior to Spring 2019 semester, the course did not explicitly include any elements of HCD.

In Fall 2018, a newly established design center at this university contacted the course professor to discuss potential collaboration as part of the center’s initiative to integrate HCD in higher education courses. In our initial conversations with the course instructor, he noted that the three previously mentioned course components worked well independently, however, he noted it was hard for students to connect the learning outcomes from these components. The professor wanted to design an instructional tool that would help students make strong

connections across course lectures, discussions, and their community placement experiences in their final reflection paper for the course. However, he insisted that he wanted this done with minimal change to the existing course curriculum and structure. After brainstorming a set of ideas, we decided to design an instructional booklet that would assist students in approaching the community placement experience using HCD. In our design of the booklet, we aimed to assist students in connecting the course content to how they implement HCD processes and document their learning outcomes during their community placement experiences. We also aimed to foster students' development of human centeredness. In this first iteration, IDEO's human-centered field guide (IDEO, 2015) informed our design of the instructional booklet. It was composed of five sections: Assumptions and Hypotheses, Observations, Interviews, Patterns, and Insights, and Design opportunities. Each section included prompts that guided the students in implementing the relevant HCD processes and documenting the outcomes.

**Table 1: The five techniques from Hess and Fila (2016) reflected in the booklet.**

Empathic Technique	Definition
Direct Observation	Observing stakeholders in the context where the problem/design challenge exists to understand the context, problem, and users.
Empathy by Proxy	Speaking with intermediaries who act on behalf of users or who are middlemen between the designer and user in order to define constraints.
Interaction	Interviewing and talking with potential users of your design to develop understanding of their needs.
Projection	Mentally putting oneself into the shoes of the users to encourage reflection and deeper understanding of the users.
Empathic Concern	Using learnings about potential users to help set design criteria that align with the users' well-being. This typically relates to safety concerns and design constraints.
Synthesize Empathic Knowledge	Often in concert with empathic concern, synthesizing all learnings to set design criteria - including defining constraints and design opportunities.

At the end of Spring 2019, we administered a post-course survey to assess students' knowledge of HCD processes and acquiring HCD skills (Shehab et al., 2021). The 23-item survey used a 5-point Likert Scale with 1 = strongly disagree and 5 = strongly agree. Forty students completed the survey; many were neutral toward almost all items. Instructor and TA interviews further explained this finding, stating the booklet added more structure to the community placement exercise, however, they mentioned that the booklet did not make the necessary explicit connections between the course content and the different HCD processes, including those on empathy.

In light of the collected data, we developed a second prototype of the booklet in Fall 2019 by making minor changes. We added an Introduction section where we explicitly stated the definition of HCD and the purpose of the booklet as a tool to apply HCD processes to design relevant and meaningful solutions to problems identified during the community placement experience. We also met with the instructor and the teaching assistants who suggested reducing the number of interviews that the students were required to conduct. The booklet was implemented again in the Fall 2019 semester. To gain a better insight of how the students were using the booklet, one researcher from the center observed one discussion section whenever the TA was engaging the students in the content of the booklet. Observations suggested the need to guide the TAs through assisting the students as they use the booklet. Seven students consented to share their completed booklets with the research team. Examining the content of the booklets suggested that the students are using the course content to complete some sections; however, we still needed to add sections that could help students think about and reflect on their participation in the HCD processes, which in turn, can promote their development of social empathy.

## Second iteration: Fall 2020

Prior to Fall 2020, we designed a third prototype of the booklet based on the first iteration. We incorporated three central changes. The first focused on building in instructional activities that explicitly engaged students in the five empathic techniques that are described in Table 1. For example, we included an interview planning guide that asked students to think through who they needed to interview and what kinds of questions they needed to ask them. We also added reflective practices (Goldsmith, 2012), such as self-assessment rubrics, that allow students to reflect on how well they engaged in HCD processes throughout the booklet. These changes made HCD processes more transparent for the students, the TAs, and the instructor of the course. Finally, to support TAs, we built in guided notes in a teacher's edition of the booklet. These guidelines gave TAs explicit tips to help students engage and reflect on HCD processes more fully. For instance, in the student's edition, students were asked to answer the question "Who are you?". To support TAs in helping students to critically answer that question, we included guidelines that encourage TAs to "unpack" that question by describing positionality and perspective.

## Discussion

Navigating the iterative process of designing this booklet required aligning the needs of the course with the possibilities of integrating the HCD processes. Each iteration built off feedback from instructors and students as well as researchers' observational data. Additionally, as the booklet evolved, research on HCD, particularly on empathy education, has influenced the types of activities that are included in the booklet, particularly in the third prototype. The first two iterations revealed that students have a somewhat clearer understanding of how to implement HCD processes after the course. However, we still have little insight into how effectively this booklet supports students in developing a human-centered mindset, specifically social empathy. Further research must be done to establish the booklet's effectiveness in developing social empathy in future PSTs. Therefore, we propose to conduct future research that seeks to explore the question: how does an HCD booklet impact students' generation of empathic solutions to educational problems and the development of social empathy? This study will conduct both pre- and post-surveys that seek to measure students' social empathy levels. Additionally, the research team will gather observational data of discussion sessions to document the interaction between TAs and students with the booklet. Finally, we will collect students' completed booklets and conduct content analysis to examine if students demonstrated evidence of effectively engaging in the empathy techniques promoted in the booklet and generating empathic solutions to educational problems. We will also conduct interviews with students to understand the impact of the booklet on their development of social empathy and their perceptions of its use in designing curriculum for their future students and communities. The proposed study has the potential to impact our understanding of using HCD pedagogy in teacher preparatory programs. Particularly, evidence that the booklet does in fact help PSTs develop social empathy as part of a human-centered mindset as they engage in Hess and Fila's (2016) empathic techniques will support the argument that empathy is teachable, and explicitly engaging learners with these empathic techniques in instructional activities fosters that learning.

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