International Society of the Learning Sciences

Supporting Empathy in Design Thinking - A Learning Community Approach

Rubaina Khan, Preeti Raman, James D. Slotta
rubaina.khan@mail.utoronto.ca, preeti.raman@mail.utoronto.ca, jslotta@gmail.com
OISE, University of Toronto

Abstract: Empathy plays an imperative role in human-centered design thinking processes. Our research explores how a learning community approach can help students become empathetic designers. By situating the design experience within a community of peers, there are increased opportunities for norming and exchange, shared strategies and resources, and a sense of collective progress. Such design activities allow students to bring in their voices and identities by offering empathetic feedback into the classroom discourse. Using the Knowledge Community and Inquiry (KCI) model, we explore how the diversity in the dispositions and experiences of students plays a unique and major role in framing and shaping design problems through peer feedback and perspective-taking. This paper reports the findings from six graduate-level courses that offered a design assignment in an education faculty taught over two years.

Introduction and Significance of Study

Within education, design thinking has been recognized as a critical 21st-century competency (Van Gompel, 2019), included widely in the curriculum standards (e.g., NGSS, 2010), and targeted within many reform efforts. Our research explores how a learning community approach can help students become empathetic designers. The graduate-level courses being investigated bring in students from diverse educational, cultural, and professional backgrounds. By situating the design experience within a community of peers, there are increased opportunities for norming and exchange, shared strategies and resources, and a sense of collective progress. In particular, we examine the Knowledge Community and Inquiry (KCI) model, which has been developed to support communities of learners engaged in collective inquiry (Slotta, 2013). Design, as a form of inquiry, is well suited to KCI as it draws upon resources and input from peers. We examine how a design assignment was implemented within six graduate-level courses in the domain of education, media, and society. We report our analysis of students' peer-supported designs, which made wide use of social annotations, scaffolded feedback, and community knowledge using Google Drive as a technology environment. This analysis informs our understanding of how a learning community approach can promote a collective understanding of empathy within the class, and deeply support human-centered design.

The research questions that framed this study are: (1) How can a learning community approach support students in learning about designer empathy? (2) What are some forms and features of a design-oriented inquiry assignment that support designer empathy, and how do they benefit from a learning community?

Theoretical and Conceptual Frameworks

The Knowledge Community and Inquiry Model

A learning community has been defined as "a culture of learning in which everyone is involved in a collective effort of understanding" (Bielaczyc & Collins, 1999, p. 2). The Knowledge Community and Inquiry (KCI) model has been developed to guide the design of "collective inquiry" curricula that integrate whole class, small group, and individual activities and ensure that all students progress on the learning goals (Slotta et al, 2018). Students engage in epistemic orientations (i.e., to the community pedagogy), in which they learn how to learn as a community and come to value the shared nature of artifacts and ideas. This form of the curriculum also prioritizes diversity and democratic forms of learning, student voice, giving students voice and ownership over what they want to learn and how they want to share it with others.

Definitions and Dimensions of Empathy

Training and practical experience can advance the designer's empathic understanding of users. However, in the context of learning design through a semester-long course, it is challenging for designers to engage directly with their communities and often must rely on secondary understandings to frame their design space (Li & Hölttä-Otto, 2020).

In this study, we use three dimensions of empathy (cognitive, affective, and conative) as offered in literature to form our conceptual framework. Cognitive empathy refers to the study of the ability and accuracy of the understanding of other people's thoughts in different contexts (Cuff et al., 2016). Affective empathy is usually formed after the apprehension of other people's feelings and problems and sometimes entails some responsive actions (Decety & Lamm, 2006). Lastly, conative empathy refers to the study of the practical application of taking supportive actions in response to other people's feelings and problems (Adams et al., 2014). We use these dimensions of empathy for analyzing peers' feedback in a design thinking assignment and to understand the role of fostering empathy in a learning community.

Course Design and Data Sources

Within each of the six graduate courses, a design project was included in which small teams of 2 or 3 students engaged in designing an innovative media application for learning. All courses were taught by the same instructor during two consecutive academic years and were offered to cohorts of masters and Ph.D. students. Course enrollment was between 22-26 students for five of the courses, and 12 students for the 6th. A major course project was conducted by small groups of students who worked together on a design idea that applied course themes within a specific community or context.

Analysis of community feedback

For this study, 547 comments provided by peers during the design process were analyzed and coded by two researchers independently with an inter-rater agreement of 84.712%. While both affective and conative empathetic comments were visible in many designs, there were more cognitive empathy comments per design (see Table 1).

Table 1
Frequency and Dimensions of Empathic Comments

Dimension of Empathy	Number of comments	Designs impacted	Examples
Cognitive	70	30	"However, for beginner-level students, the "writing" part might be a bit overwhelming because writing sentences do need a lot of grammatical knowledge." "When students answer the questions, they might feel more like playing games instead of reciting vocabulary. "
Affective	10	4	"This app worries me as we are putting kids in buckets too soon. I am also very concerned with equity issues. The rich get richer" "My experience with people jumping into open-source coding projects is there is a whole lot of downtime and head-scratching in the beginning. You will need to get them all through this."
Conative	37	28	"Maybe can get students to create videos and demos to be attached with their modules" "Adding a live chat feature (either with a consultant or an AI) would be nice. This would be super useful when a student stressed and is filling in the OUAC application and needs some immediate clarification"

Semi-structured interviews

We interviewed 6 students at the end of their course to understand their perspectives on the use of the learning community approach. Specifically, through a semi-structured interview, we asked them about the identities and roles they brought into the learning community, in what ways did their peers influence or shape their design idea, and how would they advance their design idea in the absence of the learning community. The interviews

were transcribed and coded inductively to let themes emerge that allowed us to understand the nuances of how empathy from the learning community may have shaped the students' designs, as shown below:

Interdisciplinary perspectives

Our interviewees are teachers that gave them lenses from the real world to evaluate their peers' design process and final outcomes. As the nature of the course deals with the application of knowledge media in society and communities, several interviewees identified with others' design because of their situational and personal experience as immigrants, parents, international students, and/or curriculum designers. As one student aptly described what they saw as the purpose of their identity in the learning community:

> "…helped me to understand the complexity of intersectional identities as we shape our designs" (Tiara, 2021).

Hidden biases uncovered

Several interviewees identified that in a course-based design assignment, biases often creep into their assumptions, especially during a time crunch. One student believed that the learning community's comments brought awareness of some of her team's biases. She added that the comments that were made early in the design process led to influencing decisions on the final design.

Sophistication in design

Almost all interviewees indicated that their final design featured nuanced ways of addressing complex issues, connected to a variety of communities' needs and aspirations, and leveraged on state-of-the-art technology. They all attributed these achievements to their supporting learning community as seen in this statement:

> "I would have probably ended up with a less detailed and sophisticated idea. I would have also had more doubts about the value of the design. The community both encouraged me to continue working on my original idea and helped me fill different gaps in the design."

Case study of a design artifact

Using KCI principles, the instructor created scaffolds for design teams to gather feedback through empathy exercises at different stages of the design. Teams asked their peers for feedback informally in breakout sessions during class in the initial stages of the design process. Next a formal peer-review was conducted on a document that detailed the design's purpose statement and features. Students were given the agency to comment on as many designs as they wanted to and were encouraged to leave empathetic comments that would broaden the team's perspectives. Finally, teams showcased their elaborate designs by presenting user journeys. At this juncture, design teams had the opportunity to receive the last round of feedback that challenged their assumptions and pushed them to advance their designs. We present a case study of a design of a career identity formation application for K-12 students. Some of the comments that were given to the design team during the various review channels are indicated below. The commenter's identity has also been considered during this analysis.

Informal feedback during class

Jason, a doctoral student, served as a senior K-12 school administrator for several years before becoming a full-time student. He is interested in understanding how technology can be leveraged to create communities and drive education reform. The team documented the following comment in their learning journal:

> "What would incentivize the students to join your app? I would find ways to get parents trained and more involved. Also, I find that a culture is created if they knew their friends were using it."

Formal peer-review feedback

The design team documented several suggestions for technology enhancements and ways their users may be motivated to use their application during the formal peer-review feedback. An example of a comment that fostered empathy for the design team is shown below.

Zeba is a parent of four school-going children ranging from ages 15 to 5 years old. She is also an online learning experience designer engaging post-secondary students to develop stronger career

identities. She left the following comment on the design team's document which the team chose to highlight in their learning journal.

> "I see the potential for students to view it as part of the school or as an academic tool, hence not use it for intrinsic purposes. Kids would engage if you considered adding some gaming features an indication of progress."

Peer feedback during design presentation

The design team shared their design with their peers through a visual presentation and emphasized how a potential user would interact with their design. At the end of the presentation, the team highlighted several comments made including their colleague Valeria's comment. Valeria is a researcher who builds and studies technology scaffolds for instructors to engage learners and she commented:

> "I would consider an AI "coach" that helped students make progress on certain career goals, and even advocate for that student in the other communities of participants."

Discussion and Further Research

Building empathy in the design process starts with making space for self-empathy. When students approach design thinking by starting to reflect on the identities they bring into the community, they go through the process of "noticing, centering, sensing, suspending judgment, intention setting and attending to self" which allows them to reciprocate by providing spaces for others' experiences (Train & Niezink, 2021). As such, instructors can provide students with frameworks through which they can bring in their unique dispositions, knowledge of the communities they inhabit, and lived experiences. We noticed that the nature of the comments that students provided were often related to their research interests, lived experiences, and professional expertise. Therefore, exhibiting to students that their experiences and voices are valuable for the class community can make them eager to hear others' worldviews and practices (Cartaya, 2021).

This study is among a select few that explores the concept of supporting empathy using a learning community approach. Adopting such an approach enables the class as a community to engage in empathetic discourse. A learning community pedagogy embraces grounding in the theme of the course while engaging openly in dialogue - making student voice an integral aspect of the experience. In this study, we provided the space in which students' voice, their lived experiences, and positionality was an asset for design teams.

Further research must be done to establish the effectiveness in developing empathy with the help of the learning community. Therefore, we propose to conduct future research that seeks to explore the question: how does a learning community pedagogy impact students' generation of empathic solutions to educational problems and the development of empathy?

References

Adams, E., Dancz, C., Seager, T., & Landis, A. (2014). Improving learning productivity and teamwork skills in freshman engineering students through conative understanding. In *ASEE Annual Conference and Exposition, Conference Proceedings*. https://doi.org/10.18260/1-2--20609

Bielaczyc, K., & Collins, A. (1999). Learning Communities in Classrooms: Advancing Knowledge For a Lifetime. *NASSP Bulletin*, *83*(604), 4–10. https://doi.org/10.1177/019263659908360402

Cartaya, P. (2021). Empathy in Design Begins with the Self. *Voices from the Middle*, *29*(1), 25–27.

Cuff, B. M. P., Brown, S. J., Taylor, L., & Howat, D. J. (2016). Empathy: A Review of the Concept. *Emotion Review*, *8*(2), 144–153. https://doi.org/10.1177/1754073914558466

Decety, J., & Lamm, C. (2006). Human Empathy Through the Lens of Social Neuroscience. *The Scientific World Journal*, *6*, 1146–1163. https://doi.org/10.1100/tsw.2006.221

Li, J., & Hölttä-Otto, K. (2020). The Influence of Designers' Cultural Differences on the Empathic Accuracy of User Understanding. *The Design Journal*, *23*(5), 779–796. https://doi.org/10.1080/14606925.2020.1810414

Slotta, J. D. (2013). *Knowledge Community and Inquiry: New Opportunities for Scripting and Orchestration*. OISE, University of Toronto.

Slotta, J. D., Quintana, R. M., & Moher, T. (2018). Collective inquiry in communities of learners. *International handbook of the learning sciences*, 308-317.

Train, K., & Niezink, L. (2021). *The Self in Empathy: Self-Empathy 2nd Revised Edition*.

Van, G. (2019). Cultivating 21st century skills: An exploratory case study of design thinking as a pedagogical strategy for elementary classrooms. *Theses and Dissertations*. https://digitalcommons.pepperdine.edu/etd/1080