GETTING RADICAL: USING DESIGN THINKING TO FOSTER COLLABORATION

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Design Thinking (DT) has recently been adopted in some higher education disciplines as an effective pedagogical approach to enable students to acquire the skills needed for solving real world problems. As a human-centered, iterative process, design thinking is characterized by working with others to understand, define and solve problems using empathy, creativity, and radical collaboration. Many university courses also stress collaboration as a learning approach. However, not all students function well in collaborative environments. Based on their work in the Design-based Thinking course at the Werklund School of Education, University of Calgary, the authors asked, "could the design thinking process be used to foster collaboration among students and encourage radical collaboration"? In this paper the authors present a brief overview of the literature in this area and propose some parallels between the design thinking and collaborative team building processes.

Keywords: Design thinking, collaborative learning, radical collaboration, team building

Given the increasingly complex challenges of the modern world, it is incumbent on higher education institutions to provide students with the skills and competencies they need to deal with real world situations or problems. One of these competencies is collaboration. Gronski and Pigg (2000) defined collaboration as "an interactive process among individuals and organizations with diverse expertise and resources, joining together to devise and execute plans for common goals as well as to generate solutions for complex problems" (p. 783). In education, collaboration, or more accurately collaborative learning, is an approach that involves students working in groups on learning tasks. It is a regular and frequent phenomenon in North American K-12 classrooms and postsecondary institutions. Many industries and sectors also rely on the expertise and talents of people collaborating and working in teams to achieve a particular goal. Gosselin, Cooper, Lawton, Bonnstetter, and Bonnstetter (2016) described collaboration as "one of the most soughtafter competencies, whether it be in business, academia, or public service…" (p. 324).

Collaboration involves two aptitudes. The first is the ability to collaborate with internal members who have been assigned to the team. The second is the ability to go beyond the internal team to seek new information, ideas, support or expertise from external sources. The latter is considered radical collaboration (IDEO, 2013; Scott, 2017; Sense to Solve, 2017). Radical collaboration brings together people from diverse disciplines with differing perspectives, backgrounds, competencies, and approaches to help with a task, whatever it might be – solving a problem or challenge, conducting research, observing, evaluating, and synthesizing a process, or designing a product (Sense to Solve, 2017). Inspiration comes from the ideas of people with varied talents, skills, beliefs, and knowledge.

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Support for collaboration and radical collaboration can be derived from Bandura's (2001) socio-cognitive theory. Socio-cognitive theory focuses on how humans come to elaborate their thinking through interactions with others. Knowledge is co-constructed between the individual and the social other. In the process, individual cognitions are transformed to create collective cognitions or something unique from the individual parts that compose it.

Despite its potentially beneficial outcomes, collaboration is not a simple process. It requires the use of multiple competencies including empathy, negotiation, consensus building, problem solving, conflict resolution, and mediation (Gosselin et al., 2016). Also, because collaboration is a blending of individuals in a particular sociocultural context(s), interactions can be fraught with both relationship and process difficulties. Koria (2015) believed that during collaboration, "people, ideas and experiences meet and collide in some form" (p. 22). Diversity in ideas, backgrounds, cultural values, and goals may also lead to reluctance to share knowledge.

For example, in some of the postsecondary courses where students are required to collaborate on a learning task, the authors have noticed issues with communication, team conflict, power dynamics, workload equity, and expectations. Many of these issues are common collaboration challenges identified in the literature (O'Neill & Associates, 2018; Tamm & Luyet, 2005). Also, in the education program where the authors teach, the required field practicum inevitably presents challenges for novice teachers. In addition to lesson or unit planning, classroom management, teaching new courses, differentiating for students, and managing their time, novice teachers must learn that effective collaboration is essential in the teaching field.

So what can be done to foster collaboration and radical collaboration among novice teachers and other students? Could a design thinking process be used to resolve some of the issues that occur during collaboration or radical collaboration? This paper presents a brief overview of the literature in this area and proposes parallels between the design thinking and team building processes for promoting and enhancing the collaborative process.

DESIGN THINKING

Originally, Design Thinking (DT) was the purview of certain industries (e.g., engineering, architecture, industrial design, software development, and so on) that focused on creating products, structures, or processes for people. The practice of design thinking typically involves gathering input and feedback from clients during the various iterations and refinements of the design phases. The term *design thinking* was originally coined by David Kelley at Standard d. School to embody the thought processes and mindsets involved in the design process. Kelley proposed a five-stage model of DT consisting of empathy, defining, ideating, prototyping, and testing, with an iterative feedback loop among the five, non-linear stages (IDEO, 2013).

In the empathy stage, designers conduct research about a problem and talk with the different individuals who are experiencing the problem. Designers empathize with these individuals by "stepping into their shoes" and developing knowledge about what they say, do, think, and feel. Through discussions and observations and using the data they have collected, designers define the problem in very specific and concise terms. They then ideate or generate a range of creative ideas or solutions to address the problem. Quantity of ideas over quality is encouraged, with no idea being discouraged or too far-fetched. Next, designers build prototypes (models, diagrams, storyboards, role plays, and so on) of some of the ideas. The goal here is to determine which ideas will work and which will not by weighing the feasibility and workability of the prototypes. Finally, in the testing phase, designers have their clients test out the prototypes and get feedback to determine if the prototypes will solve the problem or improve their clients'

situation. Feedback and input from clients as well as reflection and radical collaboration are critical in each phase of this non-linear process. Designers must be willing to revisit previous stages in their search for a solution that will ultimately meet their clients' needs (IDEO, 2013).

Since its origin, other models and adaptations of design thinking have appeared. One example is the double-diamond model of DT (Design Council, 2018; Norman, 2013). While it still adheres to the original stages of design thinking, the double diamond model introduces the processes of idea divergence (researching all aspects of the problem and generating multiple solutions) and idea convergence (defining a problem and prototyping/testing of prototypes) into the different stages of DT. See Figure 1 for a visual representation of the five-stage and double diamond models of design thinking.

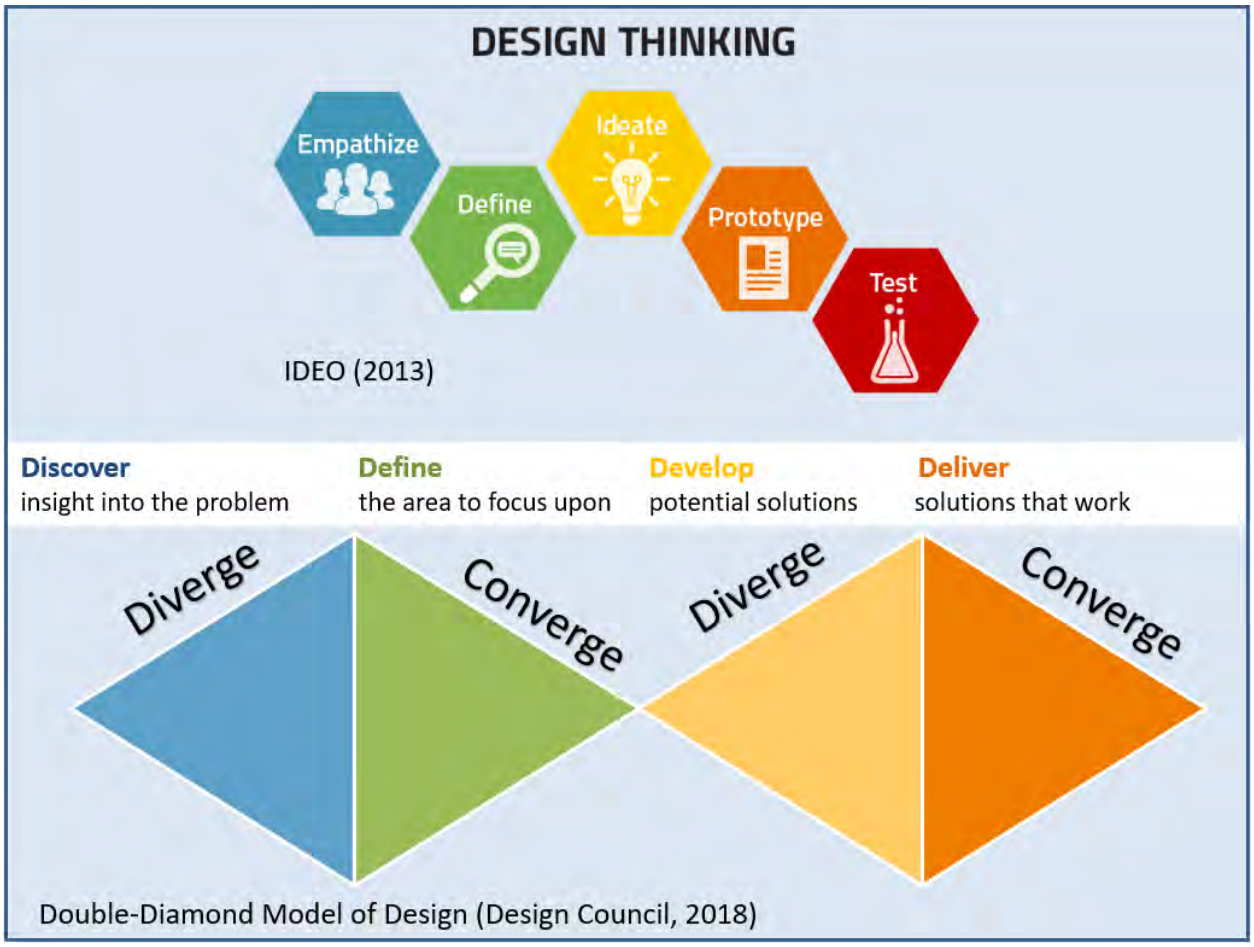

Figure 1. Two conceptual models of design thinking

One field where design thinking is starting to make inroads is education (Friesen & Jacobsen, 2015; Koh, Chai, Wong, & Hong, 2015; Laurillard, 2012). For example, students enrolled in the EDUC 546 Design-based Thinking course at the University of Calgary are encouraged to become "*designers of learning*" (Scott, 2019). They are inspired to brainstorm problems of practice they have encountered in their field practicums and generate solutions employing a design-based thinking model. For these novice educators, the first step is often the discovery of a challenge – whether it is around meeting students' needs, redesigning the curriculum or classroom, or a systems issue (IDEO, 2013).

Regardless of the model or adaptation of DT that is used, design thinking is essentially a human-centered, iterative process in which teams work to define and derive solutions to complex problems (Norman, 2013). Several mindsets such as empathy, optimism, creative confidence, the urge to create or prototype, the acceptance of ambiguity and failure, and the propensity toward radical collaboration are cultivated during DT (Innovation Training, 2018).

GETTING RADICAL

Radical collaboration is the bringing together of individuals with diverse perspectives to create innovative solutions or approaches to solving problems (Snyder, 2014). This act of "coming together across disparate, but engaged domains" is often unfamiliar or uncomfortable but it is a necessary step for teams "in order to identify and solve problems together, to achieve more than we would separately" (McGovern, 2018, p. 6).

Why is radical collaboration important for educators and in particular, student teachers? Student teachers are asked to collaborate professionally with their partner teachers, school colleagues, specialists, parents, and students, and some lack the collaboration capital, or the "collective ability . . . to build effective collaborative relationships" (Tamm & Luyet, 2005, p. 3). As well, they are sometimes reluctant to seek outside advice that would expand their expertise (Patil & Siegel, 2009) and better prepare them for instruction. The authors believe that design thinking may be able to ameliorate some of these challenges for beginning teachers and explore the parallels between effective team building skills and design thinking to bolster their case.

DISCUSSION

The literature is replete with articles and books on the "how-tos" of building effective collaborative teams. One of the first steps in building an effective collaborative environment is for teams to understand what they are assigned to do and to develop goals and a shared vision of this work (Lacerenza, Marlow, Tannenbaum, & Salas, 2018; Lai, 2011; Le, Janssen, & Wubbels, 2017). Liem (2012) likened this to building "*communities of practice*", i.e., simple social systems where everyone understands the purpose and overall goal of the community and adheres to it. The contribution and commitment of all parties to a shared vision of the task, design, product or project is critical to successful collaboration (Gosselin et al., 2016). In DT, communities of practice are often established during the empathy phase.

Similar to having goals and a shared vision of the work, one of the ways in which design-based thinking process fosters collaboration among team members is by tasking them with a problem or challenge that is relevant to their particular circumstances. In other words, all team members can identify with the problem, and see their place in it. This was particularly effective when student teacher teams were given the opportunity to identify a problem of practice in their field experience, investigate whether this problem of practice was indeed the root of the challenge or a symptom of it, and then generate a plethora of possible solutions for it. As they worked towards defining a key challenge and solution that resonated with all members on the team, there was more buy-in to the problem and greater commitment to solving it.

Defining expectations for each team member and clarifying each individual's roles and responsibilities are also critical to a functioning team and are as important as the project itself (Liem, 2012). Accountability or the individual team member's ability to take responsibility for her decisions and actions is an outcome of concise role delineation (Tamm & Luyet, 2005). Clearly defined roles and responsibilities are also critical in design thinking. As stated by

Larsson (2003), design is "as much a matter of getting different people to share a common perspective, to agree on the most significant issues, and to shape consensus on what must be done next, as it is a matter of concept formation…" (p. 1).

Another area in which design thinking and collaborative teams share a common bond is valuing all ideas. In DT, teams of individuals are encouraged to diverge in their thinking and generate as many different solutions to their problems as they can imagine. They show empathy towards each other and their clients. This results in a culture of shared leadership where everyone is equally responsible for the successful resolution of the problem. This also happens in collaborative learning environments when instructors encourage teams to take on more leadership roles and responsibilities, thus producing a shift in the traditional classroom power structure.

When team members first come together to create definitions for their work, assign responsibilities, and determine expectations, they develop the foundations of trust and reliability. Trust and reliability then become incentives for committing to the tasks generated by the group (McGovern, 2018). Within the design-based thinking process, trust and reliability appear to evolve seamlessly as team members wrestle with the problem and possible solutions, while keeping their clients' needs front and center. Tamm and Luyet (2005) argued that the explicit commitment to collaborate with awareness of others leads to trust among group members.

Within design-based thinking and collaborative learning environments alike, there is a need for truthful communications as well as the ability to tolerate differences and resolve conflicts (Tamm & Luyet, 2005). Radical candor or being able to provide honest feedback allows the group to move forward (Scott, 2017). These interpersonal communication competencies lend themselves to fostering knowledge and collaboration among team members. There is a continuous exchange of information and interaction among individuals and groups. Without this constant flow of dialogue for understanding, the design process would likely fail (Larsson, 2003).

For collaboration to be truly radical, team members need to account for who is sitting at the table and who is missing (McGovern, 2018). Team members must ask: Is the group socially and demographically inclusive? Are there members who offer diverse opinions or perspectives or sufficient expertise to address the problem? Are all those who can be impacted by the decision-making of the group represented? (McGovern, 2018). If anyone is missing, the onus is on the team to either offer a seat at the table or seek out experts to share their knowledge with the group. Radical collaboration is also critical in DT. During design thinking student teachers were inspired to reach out to partner teachers and other faculty to obtain new ideas, diverse viewpoints, and innovative solutions to their problem. Thus, radical collaboration widens the knowledge gathering boundaries and bolsters the credibility of the solutions. By embracing multiple perspectives, the outcomes are richer and conceivably better solutions (Brown & Wyatt, 2010).

While the above literature review is not exhaustive, it does illustrate some commonalities in the processes of design thinking and team building. As shown in the following table and discussed above, there are striking parallels between designing thinking and team building competencies that foster collaboration.

Table 1

Common processes between Design Thinking and team building that foster collaboration

Design Thinking	**Team Building**
Problem definition (defining what the real problem is)	Developing a shared vision
Idea divergence (encouraging multiple ideas and solutions)	Brainstorming ideas
Empathy with clients and team members (through iterative feedback and reflection)	Valuing all team members' ideas and building accountability
Radical candor	Honesty in all communications
Idea convergence (narrowing down the problem/narrowing down the solution)	Setting goals
Radical collaboration (seeking external perspectives and knowledge)	Accepting guidance and suggestions from diverse sources

LOOKING AHEAD

The authors have had the privilege of introducing various models of design thinking to help students and novice teachers solve problems of practice in their field practicums. We have witnessed the synergy when group members brainstorm ideas, debate the merits and weaknesses of differing points of view, and ultimately pursue a plan for action. While DT is not a panacea for all collaborative issues, the process does seem to foster collaboration within student teams as they focus their efforts on defining and solving real world challenges through a human-centered, iterative process.

A culture of collaboration can be achieved when students are invited to focus on a particular problem or shared vision, be empathetic, set clear goals, value each other's ideas and honesty, stay accountable, and seek guidance and advice from external sources. From the authors' observations, the DT process is not only effective in helping novice teachers accomplish the above, it is also effective in fostering team cohesion and avoiding some of the collaboration pitfalls often experienced during teamwork. The potential for design thinking to nurture collaboration among team members and the use of radical collaboration to encourage students to step outside their comfort zones to gain new perspectives warrants further study.

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