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Design Thinking Applied in Higher Education: Exploring Participant Experiences

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Abstract

Higher Education is facing challenges that necessitate innovative problem-solving approaches. Design Thinking is an effective approach to address problems universities are facing. This exploratory study used a qualitative approach to survey individuals involved in the Design Thinking group and further explore their experiences participating in a Design Thinking project at a mid-sized university in the Midwest. For this study, the data was collected through open-ended questions, which were sent by email to participants with a link to a Qualtrics survey. The participants were chosen from members of campus community, who then formed a Design Thinking group. The findings criteria contain positive interaction, teamwork/collaboration, problem-solving, structure, facilitator and group size. Conclusions and future considerations that are discussed, comprise the importance of including student perspective, Design Thinking as a method for innovation to work towards solving problems in Higher Education as well as the importance of exploring participant experiences with Design Thinking.

Keywords

Design Thinking, Innovation, Higher Education.

Introduction

Institutions of higher education are facing challenges that necessitate innovative approaches to problem-solving (Zenke, 2014). Additionally, in order to stay relevant in a rapidly changing society, universities need to be intentional in fostering their identities while being mindful of internal and external pressure; this requires innovation as well (Tierney & Lanford, 2016). For the reasons above, Design Thinking has become increasingly popular in education. In particular, the issues facing institutions of higher education are often ill-defined in nature, which lends itself well to the Design Thinking Approach (Tschimmel et al., 2015) as Design Thinking is a way of conceptualizing problems and developing innovative solutions (Thienen et al., 2014).

This paper will explore the experiences of several faculty members and one student participating in a Design Thinking Project at a mid-sized university in the Midwest. Following the completion of the Design Thinking project, the authors surveyed the participants in order to explore their experience with Design Thinking. Background on the Design Thinking project will be presented as follows. Literature on Design Thinking and innovation will be reviewed to give context to participant experiences prior to discussing survey results.

Background on Design Thinking Project

This exploratory study was based on a project that integrated the Design Thinking process at one university. Senior leadership at the university identified Innovation as a strategic priority and then set a goal of increasing and fostering innovation. The university identified that they wanted to invest in a position that worked towards this goal of innovation and collaboration. This position was Assistant Vice President of Innovation who could act as group leader for the Design Thinking team. The administration at the university reviewed several tools that could be used to bring innovation to the University. Due to the ill-defined nature of the problem — a problem was identified, but the nature of the problem is still largely unknown— Design Thinking was chosen. The Design Thinking model, developed by the Hasso-Plattner Institute of Design at Sanford, was utilized. This model will be discussed later. Senior leadership identified the following scenario as the starting point for the Design Thinking Team; what if we could use faculty working cross collaboratively to reduce the number of resources we need? A nonrandom Design Thinking team was chosen for two reasons;

1. To ensure the success of the first Design Thinking project at the University
2. To ensure that faculty chosen for the team were forward thinkers.

Because of the problem's nature, faculty were needed to be from different departments to build a multidisciplinary team with multiple perspectives. Deans from each college within the university nominated two or three faculty members from their colleges. The Design Thinking Group Leader interviewed 25 people and chose 11 faculty members and 1 student for the Design Thinking Team. Faculty were chosen if they were identified as forward thinkers and could commit the amount of time needed for the project. the first session took place once the faculty were chosen. The starting question posed to the Design Thinking team was as follows. *How can faculty innovatively collaborate across departments and colleges to better serve current and prospective students resulting in more graduates generated, increased revenue and/or decreased expenses?* After the Design Thinking Team worked throughout the semester, a presentation was made to senior leadership. The recommendations from the Design Thinking team led to a reconfiguration of Colleges within the university as well as a new model for course delivery.

Design Thinking as a Method of Innovation in Education

Design has always been the impetus for innovation in product and service development. Due to the increasing publications on the topic, Design Thinking has gained popularity in education (Tschimmel et al., 2015). The need for innovation in education lends itself well to Design Thinking. Throughout the years, Design Thinking has been researched and used as a tool of innovation for Education.

The need to innovate, in order to meet the many challenges faced by institutions of higher education, has led to the introduction of Design Thinking to the university environment (Aydemir & Cetin, 2018). Higher education is facing challenges that necessitate innovative approaches to problem-solving. These challenges include decreased funding — both at the state and federal level— increasing tuition costs as well as pressure to remain competitive and meet the unique and growing demands of students, stakeholders and prospective employers. This calls for an approach that will generate multiple solutions to increasingly complex problems. Several scholars postulate that Design Thinking can answer this call (Dunne, 2018; Luka, 2014; Tschimmel et al., 2015; Zenke, 2014). According to Kimbell (2009), some institutions promote Design Thinking as a crucial component in innovation processes. Liedtka (2018) discussed that Design Thinking serves as a powerful tool for innovation by helping people reach their creative potential along with improving processes. Additionally, she identifies that a successful innovation process must offer quality solutions, involve lower risks and obtain buy-in from involved individuals; all of which are characteristic of Design Thinking.

Design Thinking

There are numerous definitions of Design Thinking in literature. One definition in particular best aligns with this paper's objective. Tschimmel et al. (2015: p.6) states, *Design Thinking is seen today as a method and process for investigating open and ill-defined problems, acquiring and analyzing information, identifying opportunities for innovation, deepening empathy, experimenting with new perspectives along with visualizing new concepts*.

Before becoming known as a popular method of innovation, design thinking — then written in lower case— referred to the cognitive process of designers. According to Tschimmel et al. (2015: p.56), since 2005, Design Thinking — written in upper case— has expanded beyond the domain of design and *became a label for the awareness that any kind of organization can benefit from the designers' way of thinking and working*. Viewing Design Thinking as multi-disciplinary methodology loosens the tie to traditional design and opens the door for the application of Design Thinking to various fields and organizations (Scheer et al., 2012). Design Thinking is now seen as an exciting new way to address problems across a multitude of professions (Dorst, 2011).

Models of Design Thinking and Innovation

According to Tschimmel et al. (2015), in the area of innovation and Design Thinking, there are several models that are well supported and identified as the most appropriate. These models include the 3I model, Riverdale and IDEO's (2012) Design Thinking for educators, and the Hasso-Plattner Institute of Design Thinking at Stanford (d.school). The last two models focus on an educational context. The 3I model of Design Thinking, as described by Brown and Wyatt (2010), has several phases: inspiration, ideation and implementation. The inspiration phase can be thought of as the problem that drives the quest for solutions. This phase includes identifying the problem, constructing the brief that provides the scaffolding to begin the project and observing the target population in their environment. The second phase, ideation, is the brainstorming process in which the team refines their observations into insights and solutions. The third phase, Implementation, is developing a plan of action based on the best ideas that were generated during brainstorming. At the heart of the Implementation phase is prototyping, which is turning these ideas into tangible solutions (Brown & Wyatt, 2010). After prototyping, a communication strategy is developed to convey the solutions.

In 2012, IDEO and Riverdale school collaborated to develop the first Design Thinking toolkit for educators. Although this toolkit was designed with the Riverdale school in mind, it is applicable to other educational settings as well. The toolkit was developed for educators without a background in Design Thinking and outlines specifications for every phase of the process. According to Riverdale and IDEO (2012), Design Thinking is a mindset and has several characteristics. It is human-centered and begins with empathy and an understanding of what motivates students, teachers and administrators.

Design Thinking is collaborative and benefits from incorporating multiple perspectives, which in turn fosters creativity. Optimism is foundational to Design Thinking and rests on the belief that we are all capable of creating change, which is especially needed in education. Design Thinking is experimental and rests on the belief that one can fail and learn from their mistakes. Given the range of needs in education, the work to be done cannot be considered finite. This necessitates the need for educators to experiment and learn by doing. Riverdale and IDEO (2012) outline 5 Design Thinking phases in their toolkit for educators: Discovery, Interpretation, Ideation, Experimentation and Evolution. The Discovery phase includes understanding the challenge, preparing research and gathering inspiration. The Interpretation phase turns the information gathered into insights and includes telling stories — capturing what has been learned and observed— searching for meaning — finding themes and defining insights— and framing opportunities. The Ideation phase includes generating and refining ideas. The Experimentation involves prototyping and gathering feedback. The final phase, Evolution, includes tracking what was learned — defining success and documenting progress— and moving forward.

The Hasso-Plattner Institute of Design at Sanford (d.school), the leading university in design thinking, developed a Design Thinking model in an educational context. The model is composed of 5 stages: Empathize, Define, Ideate, Prototype and Test (Dam & Siang, 2018). The first stage, Empathize, involves obtaining an empathic understanding of the problem. Experts are consulted to uncover more information about the problem through the use of observation, engagement and empathizing with others in order to understand their experiences and motivations. The second stage, Define, is where the information gathered in the first stage is analyzed and synthesized in order to define the identified problem. In the third stage, ideate, ideas are generated. The fourth stage, Prototype, is an experimental phase and the goal is to identify the best solution to the problem. Prototypes are developed based on implementing the solution. The prototypes are then explored and either accepted, improved or rejected. During the final stage, Test, solutions are tested which often leads to redefining the problem and furthering the understanding of the target population. Although this model is constructed in stages, the process does not always unfold in a linear way. The stages can occur in a parallel fashion and be repeated (Dam & Siang, 2018).

It is beyond the scope of this paper to discuss an in-depth analysis of the strengths and weaknesses of each model. Instead, emphasis is placed on the common thread; each Design Thinking model is well-supported in the domain of innovation. Additionally, regardless of the model being utilized, Design Thinking involves several core elements. According to Scheer et al. (2012), Design Thinking has core elements — flexible space, teamwork and the design process— that form the systemic approach to problem-solving. In this paper, teamwork and collaboration in higher education are particularly important. Design Thinking is inherently collaborative and lends itself well to identifying experiences of participants involved in the Design Thinking process at this University.

Methodology

This section contains discussion of the research design used for the study, the participants, the survey and recording procedure and also data collection and analysis, which includes exploratory research as well as ethical considerations along with a summary. An Exploratory Study using a qualitative approach was utilized to begin exploring the dimensions of Design Thinking in a university environment with a group mostly comprised of faculty. The study was suitable for this design due to the limited experience the university system has had with Design Thinking. There appeared to be no existing research on faculty members' experience using a Design Thinking model. There is limited literature specifically in the area of Design Thinking applied in a higher education. In this exploratory study, the primary raw data came from open-ended survey questions sent out by an email with a link to a Qualtrics survey. Following raw data's analysis, the researchers formulated common responses or themes drawn from the participants' feedbacks. The study was highly biased due to the fact that the group was already formed, mostly faculty.

Faculty had been chosen by the Design Thinking Group Leader for specific qualities they possessed; more particularly based on personal and professional characteristics by leaders of the university community and an interview with the group leader. This sample was not representative of the entire faculty, university or community. The benefits of this research design encompass the participants being able to describe their experiences in their own words with ample amount of time to respond to the posed questions. Utilizing an exploratory research design not only helps provide insight into the nature of the problem and the impact on students, faculty/staff and the campus as a whole, but also begins to identify the process of Design Thinking within the university system. The drawbacks of this research study included having only a small number of participants to respond as well as the participants being from only one campus and region of the country. Another potential drawback was that the study included only the unique experiences of the participants involved in the study, which this may not be indicative of others' experience in a Design Thinking group. The last drawback of this study was the potential bias in data collection methods, as the researchers are affiliated with the same university as the participants. The survey questions for this study were as follows.

1. *Survey Questions*

1. How has this process impacted you (professionally and personally)?
2. Can you describe your experience as part of the think tank team?
3. How did the team fit together?
4. How will this experience impact your future collaboration on campus?
5.What was helpful about this process? What was unhelpful about this process?

2. *Procedure*

This research study included an exploratory research design using a Qualtrics survey for collecting data. The purpose of the study was to identify reactions and perceptions of the Design Thinking team's members at this particular institution.

The timeline for data collection was two weeks following approval from the Institutional Review Board (IRB) and the invitational email. The first step in the procedure was obtaining IRB approval for the study. The second step was to speak to the Design Thinking group as a whole in person and invite them to participate in the study. The next step was to email the group with the survey link and information on the study. Participants agreed to the implied consent prior to completing the survey.

3. *Ethical Considerations*

The ethical considerations for this study included the researchers' awareness and potential relationships with the participants. This caused potential bias in the data collection. The researchers and participants were affiliated with the same university. The researchers were aware of who was on the Design Thinking team. None of the responses in the survey included identifying data and all responses were kept confidential.

4. *Participants*

The participants were all members of this particular Design Thinking group. They each were asked by a designated member of the campus community to be a part of this group. The requirement for participation in the study was being a member of the specific campus design-thinking group at a small Midwestern institution. The selection for the group was based on the following criteria; being nominated by someone, forward thinker and able to see possibility, student centric, wearing two hats — discipline specific and a university wide—aspiring to collaborate, willing to research and present ideas, participating in healthy conflict, able to move on when their ideas are heard but may not be chosen, perceived as a leader by others, balanced decision makers and having a sense of humor. The survey was completed on a voluntary basis and none of the eligibility was based on identified race, gender, culture, religion or socioeconomic status or any other demographic factor.

The invitation email requested that the participants complete the survey at their own convenience within the two-week time frame. The participants were emailed at the start of the survey and sent a reminder email after one week in which they had one more week to complete the study.

Open- ended interview questions were used to allow the participants to respond in a manner that identified their specific experiences as being a member of the group process.

Findings

Responses from the survey commented on several aspects of the Design Thinking process; positive interaction, teamwork/collaboration, problem-solving, structure, facilitator and group size were identified and are described in the section following.

1. *Positive Interaction*

In response to the questions, nearly all participants described undergoing a positive experience from the process. Many responses from the survey questions suggested participants felt they were valued and treated as an equal in the group when collaborating with each other. Feedback suggested that they felt comfortable, listened to and respected despite being from different disciplines. The participants declared that they felt respected and their ideas were heard even though they might not have been specifically utilized.

2. *Teamwork/Collaboration*

In addition to the positive interaction, responses also suggested that participants had a positive experience working as a team and building communication as a part of the Design Thinking group. For example, participant responses suggested that interaction between disciplines and across campus allowed them to feel they were part of a team that increased empathy and willingness to be open to collaborate. Responses also pointed that participants felt they received positive and encouraging support from a team that worked together. Not only did participants acknowledge a positive experience with the team's fit, but also highlighted that learning about others and their differences was part of the process which allowed the team to fit. Some described that they had not always had the opportunity to engage with others in different disciplines and appreciate their different and unique perspectives.

Responses of participants reflected on their experience being a part of the group but also shared their thoughts for the future. Participants felt that the experience brought awareness allowing them to have an open mind when collaborating with each other. The participants identified wanting to seek more opportunities to collaborate with others from different disciplines or across campus. The responses also suggested that the experience has encouraged participants to identify Design Thinking opportunities. For example, one participant shared about their experience and how they were able to identify specific processes they learned that could immediately be implemented in their own classes or interactions with students

3. *Problem-Solving*

Participants felt their experience not only made them feel comfortable in collaborating but also encouraged problem-solving. Responses suggested participants felt they were able to find new and or alternative ways to creatively solve problems while involved in the Design Thinking group. They also identified that solving problems together made them more likely to use collaboration in the future.

4. *Facilitator and Group Size*

Many participants also shared how they felt the Group Leader was helpful. The participants highlighted how having a productive and positive Design Thinking Group Leader enhanced the process. They identified that the Group Leader was a large factor in their positive experiences with the Design Thinking process. Responses indicated that the participants felt having a small group and a leader was helpful and they also offered this information and feedback for future suggestions in Design Thinking.

5. *Group Structure*

Overall participant feedbacks implied that they felt the timeline, schedule and an end goal were important in this process. While all participants described positive experiences being a part of the Design Thinking group, a few participants also identified feelings of frustration as evidenced by time constraints and difficulty in the process. They indicated that not having enough time or structure sometimes inhibited the process. A lack of a clear timeline was a barrier to the process of Design Thinking as well.

Conclusions and Future Considerations

The comments from participants of this exploratory study reinforced several important aspects of the Design Thinking process such as positive interaction, teamwork/collaboration, problem-solving, structure, facilitator and group size. The feedback gathered from participants confirmed that Design Thinking was effective in fostering innovation, which was the initial intent identified by the University for this project.

There were several future considerations determined in this process comprising the importance of including the student perspective, Design Thinking as a method for innovation to work towards solving problems in Higher Education and participant experiences of the Design Thinking process. In this exploratory study, there was only one student involved and the rest of the participants were faculty members. Future research in the area of Design Thinking utilized in Higher Education would benefit from incorporating student perspectives. This would be in line with the necessity of including multiple perspectives in the Design Thinking process. Also, in Higher Education it is important to hear and understand the student perspectives in order to form solutions. Regarding the second consideration, Design Thinking is an effective method to begin addressing problems specific to Higher Education. The nature of problems in Higher Education tends to be evident but ill defined. This lends itself well to Design Thinking as a problem-solving approach. The final consideration involves the importance of exploring the experiences of individuals involved in Design Thinking. This exploratory study focused on the experiences of participants involved in a Design Thinking process. This is important to further understand how individuals experience Design Thinking because it is inherently human centered and the person is vital to the process. There is little to no research how individuals have experienced the Design Thinking process especially within Higher Education.

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