Enhancing Student Success in Higher Education: A Human-Centered Design Thinking Approach

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Higher education institutions increasingly recognize the need to revolutionize approaches to student success. This study employs Human-Centered Design Thinking (HCDT), addressing the challenges faced by students and developing initiatives aimed at improving retention, progression, and graduation rates. Approximately 90 undergraduate students participated in the HCDT sessions, sharing insights about their academic progress. Through a collaborative process, students innovatively designed strategies to overcome these challenges. The HCDT process produced four key themes: proper and timely advisement; courses, schedules, and majors responsive to student demand; reciprocal communication clarity within and about courses; and resource knowledge availability and access. This study features the transformative potential of HCDT in higher education, placing students at the forefront of understanding challenges and designing strategies. By embracing this human-centered approach, institutions can significantly enhance retention, progression, and graduation rates, contributing to an inclusive and supportive educational environment.

Keywords: *human-centered, design thinking, student success, retention, progression*

INTRODUCTION

In higher education institutions, the prevailing notion is that they are intended to be student-centered. However, in practice, it is common to observe a stark contrast. Often, the strategies and approaches employed by the administrators within these institutions to tackle challenges or devise new services and processes operate in isolation, with little consideration for the experiences and needs of the end-users. This creates a gap between the institution's objectives and student experiences. The Human-Centered Design Thinking (HCDT) approach has emerged as a powerful framework that places paramount importance on honoring the perspectives of diverse to bridge the gap between stakeholders and end-users. By doing so, it

strives to develop sustainable and user-friendly solutions to stubborn and complex problems (Berzin et al., 2018). Engaging in the HCDT process broadens the horizons of problem-solvers by incorporating the voices of various stakeholders and truly understanding intricate issues, ultimately leading to innovative solutions.

At the heart of the HCDT approach are the experiences and perspectives of front-line users, end-users, or consumers, collectively referred to as "end-users" henceforth. HCDT leverages logic, creativity, intuition, and systematic reasoning to explore possibilities in pursuit of "what could be." The central aim is to craft outcomes that cater to the desires and needs of the end-users. HCDT is not a linear process; it unfolds as an iterative journey through three interlocking spaces: inspiration, ideation, and implementation (Brown et al., 2010). Furthermore, it is widely acknowledged that visual thinking, brainstorming, and prototyping are fundamental activities within the HCDT framework.

While HCDT initially had its roots in creating physical products, it has progressively found its way into designing services and processes. This evolution maintains an unwavering focus on the experiences of end-users. The HCDT framework promotes a shift in thinking for individuals at all levels of an organization. It encourages them to abandon the traditional practice of designing solutions in isolation within their respective units or solely relying on evidence-based practices (EBP). Instead, it advocates for collaborative solutions, co-creating with diverse stakeholders and end-users. Engaging in the HCDT process entails deep-level problem mapping, creativity in collaboration with stakeholders and end-users, co-creating solutions, and testing those solutions through piloting before their full-scale implementation.

The context of this paper revolves around utilizing HCDT as a strategic approach to comprehending and addressing the challenges related to the retention, progression, and graduation (RPG) of undergraduate students. This study specifically focuses on a health and human services college within a Southeast metropolitan university. The paper not only delves into the application of HCDT but also details the findings stemming from the research. Moreover, it outlines the development of college-wide interdisciplinary solutions shaped by the strategies proposed by the students affected by these challenges.

This research was conducted at a metropolitan university with a substantial enrollment and a diverse student body. The university is currently ranked as the third-largest public educational institution in the state. Designated as a Carnegie-designated doctoral research institution (R2), this university is renowned for its innovative approaches to teaching and learning.

The student demographic at this institution is diverse, with an increasing representation of minority groups. The student body consists of 42.8 percent identifying as White, non-Hispanic, 26.4 percent as Black/African American, 6 percent as Asian/Native Hawaiian/Pacific Islander, 15.5 percent as Hispanic/Latino, and 4.9 percent as Multiracial. In contrast to many other public institutions in the United States, this university continued to experience growth even amid the challenging COVID-19 pandemic. During the period under investigation in this study, university enrollment expanded by over eight percent. The specific focus of this study centered on one of the university's larger colleges, specializing in delivering degree programs in health and human services.

Design Thinking

The Human-Centered Design Thinking (HCDT) model is an iterative process that strongly emphasizes fostering creativity, idea generation, and a solution-oriented approach (Brown, 2008). The journey within the HCDT process commences with the inspirational stage, which involves identifying the issues presented by end-users and other stakeholders. Design thinking typically involves several stages, and various tools are readily available to facilitate a comprehensive understanding of these issues from multiple angles, with resources like www.IDEO.org offering valuable insights. As a result of engaging in these activities and leveraging these tools, stakeholders and end-users may shift their focus entirely or zoom in on a specific issue from the array they have explored, delving deep into its understanding.

Empathize is the initial stage that involves understanding the end-users' needs, feelings, and perspectives. In higher education, this means gaining deep insights into the experiences and challenges of students, faculty, staff, and other stakeholders. Interviews, surveys, and observations are employed to build empathy. Define is the next phase; the specific problem or challenge is defined based on the insights gained during the empathy stage. The goal is to create a clear and concise problem statement that guides the design

process. In higher education, this could be defining issues related to student retention, engagement, or the quality of the learning experience. The ideation stage encompasses brainstorming creative ideas to address the various "whys" identified, mapping the end-users journey as they navigate the path with a solution, and consolidating diverse ideas into a coherent solution. Creativity is encouraged, and no idea is initially dismissed. The emphasis is on quantity and variety of ideas. Techniques like the "5 Whys" can be employed to gain profound insights into the prioritized issue. Furthermore, during this phase, criteria are established that solutions must adhere to progress to the prototyping stage. Concurrently, asset mapping, competition mapping, and identifying existing models assist in pinpointing innovative solutions for consideration in the subsequent phase of the process.

Prototyping, within the HCDT model, is a continuous, iterative process where adjustments are made based on the feedback and experiences of end-users and stakeholders. In this phase, selected ideas are turned into tangible representations or prototypes. These could be paper sketches, wireframes, mock-ups, or even pilot programs. Prototyping allows for quick testing and refinement of concepts without making a significant investment.

Moving into the Implementation or Test stage, a scaled-down version of the solution is developed and introduced into the real world to assess its usability and impact, among other factors. Prototypes are presented to end-users for feedback and evaluation. This feedback loop informs further refinements or iterations of the design. The goal is to ensure that the solution addresses the problem effectively and meets the needs of the end-users. Corrections and enhancements are continuously integrated during this stage before the final version of the solution is rolled out at scale.

As articulated in the HCDT model, the demand for design research has been driven by the growing complexity of situations necessitating non-linear social change solutions (Zimmerman et al., 2007). This HCDT methodology is fundamentally rooted in a culture of inquiry, which encourages us to "examine the human condition and... comprehend through reflective practice, intellectual appreciation, and intentional choice" (p. 496). Martin and Hanington offer valuable strategies for comprehending intricate challenges and collecting data essential for designing innovative solutions (Martin et al., 2008).

METHODS

The HCDT model provided the structure for a research project within the college that sought to identify and understand barriers and determine solution strategies for improving retention, progression, and graduation (RPG) rates and other holistic student success markers within a college dedicated to health and human services. Funding was secured from an internal avenue. Institutional review board approval was received for the study.

Researchers utilized qualitative research methodology, specifically HCDT protocol, in student focus groups. The HCDT protocol approached the phenomenon of RPG student success from a human perspective and centralized the primary focus on people, their perspectives, experiences, and needs. The HCDT protocol also integrated human, organizational, and technical factors to identify and design solutions. A convenience sample of students, faculty, and advisers supported the data collection foundation that considered RPG barriers and solutions to dismantle barriers.

Participants were recruited using flyers and announcements through learning management systems in several courses and posted in key locations across the college. Invitations were sent to a large sample frame. Inclusion criteria were that the student must have completed at least thirty credit hours at the institution and be a declared major in one of six undergraduate degree programs offered by the college (public health; teacher preparation; human services; nursing; exercise science; sports management; and integrated health science). To intentionally recruit a diverse set of students from various majors, monetary incentives in the form of gift cards ($50) were provided to students who participated in a one and one half to two (1.5 – 2) hours focus group meeting. Each focus group included no more than ten students; some focus groups were as small as five students.

Data Collection and Analysis

Data collection occurred across two semesters, pre- and post-Covid. Seven focus groups were conducted with students from various disciplines, and 90 students and seven advisors and faculty participated. There were 40 students pre-Covid-19. These focus groups were conducted face-to-face with at least two trained HCDT facilitators. Fifty students participated in virtual focus groups using TEAMS during the pandemic to adhere to social distancing requirements. A brief explanation of HCDT methods was provided for participants. In the face-to-face groups, participants were invited to use sticky notes for writing responses. The sticky notes were posted on the room's walls to ensure visibility for all participants and inspire thought creativity. The virtual focus groups, with participants ranging from 4-10 approximately in each session, used Google Documents in real time to simulate using sticky notes and other key features of the HCDT focus group process. Demographics were collected using a survey completed before participation. The five questions that guided the focus groups were:

1. What is your tentative timeline for graduating from the institution?
2. What supports/resources (within and outside the university) were available to enable graduation within the timeline?
3. What challenges were encountered in meeting the timeline?
4. What recommendations for addressing the challenge mentioned?
5. If in possession of a magic wand and you held limitless resources to design solutions to support retention and graduation in a timely fashion—What would be some of the features/characteristics of the solution?

Students were given 15 minutes to respond to each question. Focus group facilitators encouraged each student to write succinct answers to each question on sticky notes or within Google Docs. These sticky notes were placed on large posters hung around the room or on a shared screen within the virtual environment. Subsequently, students were invited to read all the responses and discuss the similarities and differences of each response. Working together, students then grouped similar responses into categories and labeled them. Students completed this process for each of the questions; grouping and labeling enhanced the content validity and reliability of the data. Each focus group cohort's category and participant response data were placed in an Excel file. Data were then color-coded in similar groups to identify themes that emerged across the different participant focus group cohorts. Next, categories related to RPG barriers and recommendations and innovative solutions were identified. Subsequently, three experienced researchers independently coded and identified specific strategies within each solution and recommendation category deemed to create the highest impact on student retention, progression, and graduation. A consensus among researchers was reached for 12 barrier categories; then they grouped these into four themes. The solutions selected for further development and implementation from within these themes were identified based on feasibility, desirability, and affordability.

RESULTS

90 students and seven faculty and advisors participated in live and virtual HCDT focus group sessions. Sample demographics were collected in face-to-face and virtual sessions. A researcher-developed survey was utilized. A total of 82 respondents answered the question for the delineation of majors. The sample (n=82) included diverse student majors from the health and human service college programs. The largest student group was nursing majors, which proportionately mirrors the sizes of the various programs in the college. A total of 47 surveys were fully completed for reporting purposes. Female students were the majority (n=40), and male students were the minority (n=7). African American students comprised most of the group, then White-Non-Hispanic and White-Hispanic students.

Common barriers experienced by students included experiencing personal challenges, the presence of roadblocks, and the absence of appropriate opportunities within the university. Personal challenges were related to family situations, mental health, paying for education, and work-life balance. University-based barriers included challenges with advising, availability of courses, etc. The researchers also invited students to propose innovative solutions to address the barriers and challenges they were experiencing.

The students were invited to share their feelings, what they would know, and what they would do, if the solutions were successfully implemented. These ideas subsequently helped the researchers and a task force within the college with design solutions that were responsive to the students' needs. In this paper, the results section is presented into categories focusing on solutions identified by the students related to the challenges and barriers they are experiencing towards progression. Four themes emerged, and they included proper and timely advisement; courses, schedules, and majors responsive to meet student demand; reciprocal communication clarity within and about courses; and resource knowledge availability and access. Each theme is described below.

Proper and Timely Advisement

In universities, students are guided by advisers for course registration decisions. The study participants identified proper, accurate, and timely advisement as a feasible RPG solution for student success. Proper and accurate meant that students with credits from diverse backgrounds (especially if they were changing majors) were guided effectively for the courses in their desired major within the college.

Timely meant that students could access advising as, when, and where they needed it. A poignant comment shared by one student highlighted the need to standardize advising information, "*it would be so helpful if all advisers were trained the same way*." Students also reiterated that rather than being one of many generalized services provided to students, academic advising should be tailored according to the student's specific needs, especially if they were transferring into the institution, for instance, and should be aligned to the changing requirements of the various majors. They also recommended "*avoid miscommunication from advisers and use one adviser per program.*" Academic advisers give students a personal connection to the university, which has been shown to improve retention and academic performance. Another student recommended "*create best practices and an advising portal that directs class progression, and it should be available asynchronously or at different times of the day*." Today's students want to access advising when it is convenient, not necessarily in the 9 a.m. – 5 p.m. timeslot. If students have proper and timely access to academic advisors, participants believe they are more likely to progress and feel positive about their college experience. Student-adviser interaction influences student satisfaction with their college experience. Participants indicated that using academic advising services can make a difference in student success, especially if the advisors are well-trained to address students' concerns related to course management, curriculum mapping, and transfer, as well as finding the right career for their respective strengths. To achieve success and increase RPG rates, academic advisors must provide the guidance students need and deserve.

Courses, Schedules, and Majors Responsive to Meet Student Demand

Students desired a more student-friendly course scheduling and program curriculum structure. They desired course structures, schedules, and delivery mediums that matched their needs and styles of learning. One student noted, "a*ll of the prerequisites for the major should be the same across the health profession majo*rs." Another commented, "*More sections are needed to meet the demand of expanding enrollment*." Additionally, another student suggested that when planning for class schedules, "s*tudents should be polled to match student's need for class time*s." Interestingly, almost all groups across the different programs strongly recommended that all faculty be better at delivering online (synchronous and asynchronous) courses, especially the data collected post-COVID.

Reciprocal Communication Clarity Within and About Courses

Many participants recommended regular, consistent, and diverse mediums of communication with students. One student remarked that "*all assignments should be made available to students at the beginning of the semester to allow students to create more balance. There are no such thing as overwhelming students at the beginning when the assignments weekly cause more stress."* Examples of other suggestions included "*compassionate communication*" by faculty and staff, "*banners on university transport buses to communicate information,*" and establishing a "*concierge service of each majo*r" within the college. They also recommended a "one-stop shop" idea as a communication hub for the college. Each recommendation

would enhance the accuracy and timeliness of information related to course availability, course rigor, and class sizes. Students also desired opportunities to explore other fields of study, earlier than currently exists in their college careers. A student suggested "*during general education classes, students should be able to learn about the various health profession degrees and careers."* These communication recommendations would enhance the quality of their academic experiences and retention, progression, and graduation.

Resource Knowledge Availability and Access

Several sub-themes emerged in this solution category: financial literacy, peer mentors, and self-care. Resources to enhance financial literacy were a major student recommendation since many are ill-equipped to understand and manage the financial costs of higher education. One suggestion included "*holding seminars for parents and students to understand financial aid options."* Participants also recommended utilizing peers to mentor them in all facets of academic life—career, campus life, courses, wellbeing, etc. For instance, one student articulated for "*student organizations to host new student family orientations to give them an overview of the curriculum, tour the building, and show how busy their schedules will be."* These sentiments were also portrayed in the comment about hosting *"a family orientation for each program in the college.*" Finally, students were particularly insightful about strategies for addressing stress. They offered tactics for studying more effectively and engaging in better time management, along with other ideas that could *"influence long-term life skills.*"

Interestingly, students cautioned the researchers to use social media to share helpful resources with students but not overwhelm them. One student indicated that although "*social media can [have] a negative impact, it can also show the real lives of (this institution) students and showcase how students are successful."* Students cautioned the researchers, stating, "*Don't overwhelm students with too much information*." It was clear from the suggested solutions that students desire more information on the nuances of attending a university.

DISCUSSION

This southeastern university and the entire higher education system in the state are focusing on student success efforts to enhance RPG. The findings from this study were used to submit an internal multi-year grant co-authored by the researchers and several other faculty and staff from the college. The grant proposal delineated the challenges and the solutions/strategies to address the challenges as recommended by the study participants. The multi-pronged solutions and strategies were placed within an ecosystem model. The success of the proposal and the multi-year funding provided to the college would not have been possible without using a human-centered design approach for understanding students' challenges and designing solutions with end-users at the core.

The first theme of accurate and timely advising forms the cornerstone of student success models. Several students struggle because they either take courses they do not need or the courses they have taken before switching majors are not accurately applied to the new major. Students approach advising in a novel fashion—online, asynchronously, etc. Establishing an advising structure and process that effectively integrates academic, career, financial, and on-campus resources and encourages stronger advisor-advisee relationships can contribute to holistic advising (Fountain, 2021). Non-academic aids such as student success workshops and one-on-one engagement with teachers and staff are included in holistic advising. Integrating these features into advising can enhance the quality of students' academic and non-academic experiences in a university. According to studies, the success of an advising program is determined by the establishment and development of a relationship between the student and the adviser (Coll et al., 2007; Zhang et al., 2019), and a good advising program can help increase student retention and graduation rates (Montag et al., 2012; Tudor, 2018).

To realize the full benefits of holistic advising, institutions must first understand the current state of their advising program, identify gaps, establish seamless coordination among student support services and advising, and provide necessary resources and training to campus staff to implement programs (Gries, 2013; Suarez & Beatty, 2022). Regular meetings between advising and support services can bolster the quality of

designing a seamless delivery system for students (Williamson et al., 2014; Wenham et al., 2019). Additionally, a feedback loop can be created wherein faculty and students interface with the seamless delivery system and assist it with being dynamic to meet the changing needs and trends. The institution's administration needs to prioritize the above ideas and allocate appropriate resources to realize the full potential of holistic student advising.

To further enhance students' academic experiences, the institution has incorporated student success initiatives into its strategic plan and quality improvement efforts. The institution has created several dual-degree pathways (Double Owl) wherein undergraduate students in their senior year can take graduate classes—between 1–3 courses that will count towards undergraduate and graduate degrees. Over ten pathways were established in the college, and several additional options are being explored and developed. Quality improvement efforts are in the realm of designing internships, practicum, and clinical experiences that are well-coordinated across the 10+ programs in the college. This initiative enables students from various disciplines to work with each other in the community agency/organizations in a more collaborative and interdisciplinary fashion to enhance their academic experience and create a more positive impact in the community.

The second theme pertained to course offerings, online courses, and communication of course contents and expectations before students enrolled in a course. With non-traditional students forming the core of the college's enrollment and with gated programs, these recommendations are being considered by the various program heads, and modifications are being made to accommodate as many suggestions as possible. For instance, faculty are trained to design innovative and interactive course content as several courses are offered online (synchronous and asynchronous). Information sessions are held for new majors in different programs where they learn about the curriculum, course contents, expectations, etc. The college has started progressing in the recommendations offered for the second theme.

The third theme referred to enabling and promoting respectful, mutual communication throughout the university. A prominent recommendation from the participants' input was the importance of establishing regular, consistent, and diverse means of communication with students. This emphasis on clear and ongoing communication reflects a deep understanding of information and transparency's critical role in student success. Moreover, the call for "compassionate communication" by faculty and staff recognizes the emotional and psychological aspects of student well-being. This approach acknowledges that empathy and understanding can significantly impact students' experience and success. The idea of a "one-stop shop" communication hub aligns with the broader trend of centralizing resources and information. Such a hub can streamline access to crucial details about course availability, rigor, class sizes, and various academic opportunities. Clear, compassionate, and diverse communication channels, along with opportunities for early exploration, create an academically enriching environment that supports student well-being and success.

The fourth theme pertained to accessing resources on campus. Students expect real-time, immediate, and on-demand transmission of information. Consequently, various modalities of student-centric information dissemination are needed for students to interface with at their convenience for academic success. Creating and disseminating consistent communication requires planning, tracking, and effective execution. Students in the study indicated that information overload and the absence of a single entry point for seeking information within the college were contributing barriers to retention, progression, and graduation. The students identified the importance of creating a one-stop student-centric information hub, akin to a kiosk, where students anywhere on campus could get all the information they needed. The kiosk would be designed with questions that students normally pose (e.g., "How might I...." or "Where do I ..."). With the grant received by the college, a team of faculty and staff are working on designing such a robust and effective communication outlet for students.

Administrators and faculty cannot design student success strategies and initiatives without including the diverse voices of students. Additionally, student success means the "whole" student's needs must be part of the strategies. Several challenges influence student success, including, but not limited to, course offerings and availability, non-academic resources, employment, financial means, sense of belonging, acquiring concrete skills useful in the real world, managing family and household responsibilities,

becoming comfortable with others, as well as maintaining balance and wellness. Consequently, the college and the institution focus on developing a "whole" student by building an entire well-coordinated ecosystem for them in higher education.

In order to establish links that will lead to a seamless delivery system and a safety net to support all students, faculty, and staff, we are now working more carefully, collectively, and strategically via the four domains and initiatives. The domains leverage scalable methods (i.e., predictive analytics, reimaged math pathways, and use of high-impact practices). With the limitation of sample size, not only is ongoing research required to understand the evolving needs and challenges of student populations, but it is equally important to evaluate the effectiveness of innovative strategies that are implemented regularly.

Success is more about what students do while in college and less about what they attend. Undergraduate endeavors like service learning, research projects, and internships help students succeed (Johnson & Stage, 2018). Through opportunities for active learning, students can apply what they learn in the classroom to the real world. Students also have an unrivaled opportunity to develop critical thinking and communication skills. Significantly, these opportunities continue to benefit students long after they graduate.

CONCLUSION

Utilizing the Human-Centered Design Thinking (HCDT) research model in higher education has proven to be a transformative approach to addressing student challenges and fostering student success. In an educational landscape where solutions are often developed within isolated silos and where the end-users' perspectives are not always fully integrated into the design process, the adoption of HCDT has offered a fresh and effective perspective. The research undertaken in this study exemplifies the power of placing students at the core of understanding challenges and designing strategies to enhance retention, progression, and graduation rates. This holistic and student-centered approach within the HCDT process resulted in four pivotal solution themes.

The adoption of the HCDT research model has enabled this institution to not only understand the challenges faced by students but also to co-create innovative solutions in collaboration with the student body. The themes and solutions from this research serve as a testament to the institution's commitment to a student-centered and responsive approach to education. By prioritizing the student experience, fostering clear communication, and providing timely and relevant support, this institution is well-positioned to enhance retention, progression, and graduation rates, ultimately contributing to its students' overall success and well-being. This approach underscores the transformative potential of HCDT in higher education, with the potential to drive positive change and innovation in the academic landscape.

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