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Reimagining a Sociology Course for Improved Student Engagement: Lessons on Design and Delivery

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Abstract
The purpose of this reflective essay is to offer commentary on the pedagogical potential of deploying innovative approaches for course (re)design in an effort to improve student engagement. It focuses on the experiences of one faculty member who utilized design thinking and user experience research to reimagine an Introduction to Sociology course as a lab science to achieve just that. It highlights two phases of a course (re)design that centered the needs of students in order to make pedagogical changes. We share this reflective essay in hopes of inspiring other teacher-scholars to use the lessons on design and delivery to reimagine their own practice. Further inquiry, including empirical research, is needed to better understand the efficacy of design thinking and user experience research as tools for course (re)design in higher education.

Keywords
student engagement; course (re)design; sociology; design thinking; user experience research

Introduction

Higher education institutions have numerous moving parts that create a complex and dynamic ecosystem (Stensaker, 2018). Teaching and learning are arguably the most crucial functions of these intricate organizations (Coates, 2010). Students, as the group interfacing with this function, should be engaged in meaningful and transformative ways (Fink, 2013). It is crucial, then, to understand how student engagement might be intentionally woven into a course (re)design. The purpose of this reflective essay is to demonstrate the pedagogical potential of deploying innovative approaches for course (re)design in an effort to improve student engagement. We share this reflective essay in hopes of inspiring other teacher-scholars to use the lessons on design and delivery (Cook-Sather et al., 2019).

Background

Student Engagement

Many scholars and practitioners have examined the concept of student engagement in higher education. The conceptualization of student engagement, though, continues to be fluid across research and practice. Fredricks and colleagues (2004) suggest that there are three types of engagement: behavioral, emotional, and cognitive. Behavioral engagement refers to a student's participation in learning. Emotional engagement describes the reactions that a student has to the instructor, classmates, and institution. Cognitive engagement captures the essence of a student's willingness to put in the work necessary to learn. Similarly, Zepke and Leach (2010) posit that there are four facets that constitute student engagement: motivation and agency, transactional engagement, institutional support, and active citizenship. Students are engaged when they are intrinsically motivated and able to enact their agency through choices; when a transaction occurs between them and the instructor; when institutions function as supportive learning communities; and when they work with institutions to affirm their potential beyond the classroom.

Given these two broad conceptualizations, it is clear that student engagement can take many forms in the higher education context. It might occur when students transition from consumers of knowledge to producers of knowledge (Kelley et al., 2021; Taylor et al., 2012); when students are better empowered to recognize and appreciate the relevance of a course (Hales et al., 2019); when students are given opportunities to significantly interact with each other and the instructor (Aydarova et al., 2023; Dixson, 2010; Kelley & Watson, 2023); when the design of learning spaces promotes active, collaborative, and reflective learning (Arce-Trigatti et al., 2022; Kelley, 2021; Rands & Gansemer-Topf, 2017); when students are tasked with thinking creatively about problems (Miller et al., 2001); or finally, when students develop a commitment to care about others and things (Barnacle & Dall'Alba, 2017; Haynes et al., 2021).

It is important to acknowledge that there are major critiques of student engagement as a concept, though. Scholars have argued that its conceptualization is sometimes weakly theorized in the literature (Kahn, 2014), and its operationalization can often fall into the trap of the neoliberal agenda (Zepke, 2018). Moreover, Gourlay (2015) challenges us to look beyond the "tyranny of participation" when discussing student engagement (p. 410). Bryson and Hand (2008) argue that student engagement should be thought of as a form of "becoming" in which students at the university are learning for more than just the qualifications conferred at the completion of their programs of study. These arguments, however, are beyond the scope of this article and have been further explored elsewhere.

Design Thinking

Though typically associated with fields like business and engineering, design thinking has numerous applications in higher education (Lor, 2017) because its iterative and collaborative approach empowers faculty members to solve "wicked problems" (Pusca & Northwood, 2018; Rittel & Webber, 1973; Thienen et al., 2014). Wicked problems defy easy understanding because they are each characterized by their own unique complexities and apparent contradictions. Unlike puzzles or games that can be undeniably solved or won, wicked problems have no stopping rule and their solutions cannot be proven true or false. Faculty members increasingly recognize

problems related to student success as wicked problems, and Hanstedt (2018) argues that college courses should aim to develop "wicked students"—individuals empowered to tackle wicked problems in their future careers.

Design thinking emphasizes innovation through creative problem-solving, and the process includes six distinct phases: (1) studying users in order to empathize with their experiences and frame a design problem; (2) observing users' pain points in situ and identifying their unmet needs; (3) brainstorming possible solutions; (4) creating a usable prototype of the most promising solution; (5) testing the prototype with real users and incorporating their feedback into a series of refined versions; and (6) implementing the final version and confirming that it meets users' needs (Gibbons, 2016; IDEOu.com, 2020). These phases are not intended to be pursued linearly; instead, each phase can be cycled through and returned to as many times as necessary. This flexibility will admittedly result in a complex process of overlapping and intersecting loops, but it will also provide for the nimbleness required to tackle wicked problems.

User Experience Research

User experience research is the systematic study of people's experiences using a given product or service. User experience research involves the collection and analysis of empirical data on target users' attitudes and behaviors through a wide variety of qualitative and quantitative methods (Interaction Design Foundation, n.d.). For example, attitudinal measures of user experience could include survey questions about a user's preferences, and behavioral measures could include ethnographic observations of a user completing a specific task with the product under study.

The purpose of user experience research is to support design work by producing crucial insights about users' needs, goals, motivations, frustrations, and pain points. User experience research can be conducted during any stage of the design process (Farrell, 2017). For example, generative research could involve interviewing target users to understand their problems and brainstorm possible solutions, and evaluative research could involve usability testing with a design prototype to guide improvements on the next iteration. Personas and journey maps are user experience research tools that help focus design work around the unique experiences of particular types of users (IDEO.org, 2015; Kalbach, 2016; Pruitt & Adlin, 2006).

A persona is a representation of one type of target user that conveys the common behaviors, goals, and motivations shared by the group. Personas are created by collecting empirical evidence from actual users who share key characteristics, and then synthesizing that evidence into a single fictional character that is representative of the entire group. A typical persona will include the following: biographical details; information about goals, priorities, needs, and expectations; descriptions of behaviors and habits; notes on frustrations and pain points; and a significant, representative quote.

A journey map is a visualization that charts a series of experiences encountered by a persona across time as they attempt to accomplish a particular goal. Like personas, journey maps are developed using empirical evidence from real users and provide a representative picture of needs and pain points that are commonly experienced by target users in the group. A typical journey map includes three elements: (1) information about the persona, the scenario, and associated expectations; (2) visualizations of the journey phases, including details about the persona's behaviors, thoughts, and

feelings during each phase; and (3) notes on insights that could guide problem-solving and interventions.

Course (Re)design[1]

Phase 1

When I taught Introduction to Sociology at Tennessee Tech University for the first time in Fall 2017, I quickly realized my biggest challenge was to keep students engaged throughout the entire 15-week course. Because the course fulfills a general education requirement, it attracts an incredibly diverse range of students. First-year students who are not sure what they will major in sit alongside soon-to-be graduates from programs in nursing, engineering, business, and fine arts. While it may seem like comparing apples and oranges to discuss these two groups, I encourage readers to find meaning in the range of needs that had to be addressed. Approximately 25% of these varied students displayed a troubling pattern of behavior. They frequently skipped class, failed to submit low-value assignments, and rarely connected with me one-on-one during office hours or through email.

After taking a closer look at their grades, I realized there were actually two different types of students in this group: low-achieving students, who earned Ds and Fs in the course, and high-achieving students, who earned As in the course. To better understand their experiences, I conducted one-on-one interviews with five low- and five high-achieving students. I used thematic analysis and affinity diagramming to synthesize these qualitative data alongside quantitative measures of academic performance. I created personas and journey maps to guide my student-centered (re)design of the course. See Figures 1–4.

My inquiry revealed that low-achieving students tended to be first-year students with modest high school GPAs and ACT scores, indicators that college-level work might be daunting for them. Many were first-generation college students who did not know what to expect from the course. They explained that when course content proved challenging early in the semester, they felt isolated and too embarrassed to ask for help. Continuing to attend class caused anxiety, so they unplugged from the course and fell further and further behind.

High-achieving students tended to be upper-level students who were already flourishing in their major fields of study. Many benefited from the support of college-educated parents and had completed college-prep courses in high school with relative ease. They viewed the course as neither challenging nor important and were confident in their ability to earn As without investing much effort. Skipping class and failing to submit low-value assignments were calculated choices, and they were able to score well on exams by quickly skimming textbook chapters on their own.

I used these insights to frame my design problem as involving two types of "extreme users," each with their own unique needs. Low-achieving students needed more social support to voice their concerns and get help when they needed it. High-achieving students needed a more meaningful connection to the course other than simply earning "easy As." This classic design research approach involves studying the needs of students who fall outside the "normal" section of a standard bell curve in order to solve problems impacting the relatively small number of students

[1] This narrative is written from the perspective of the second author, who was the instructor for the course.

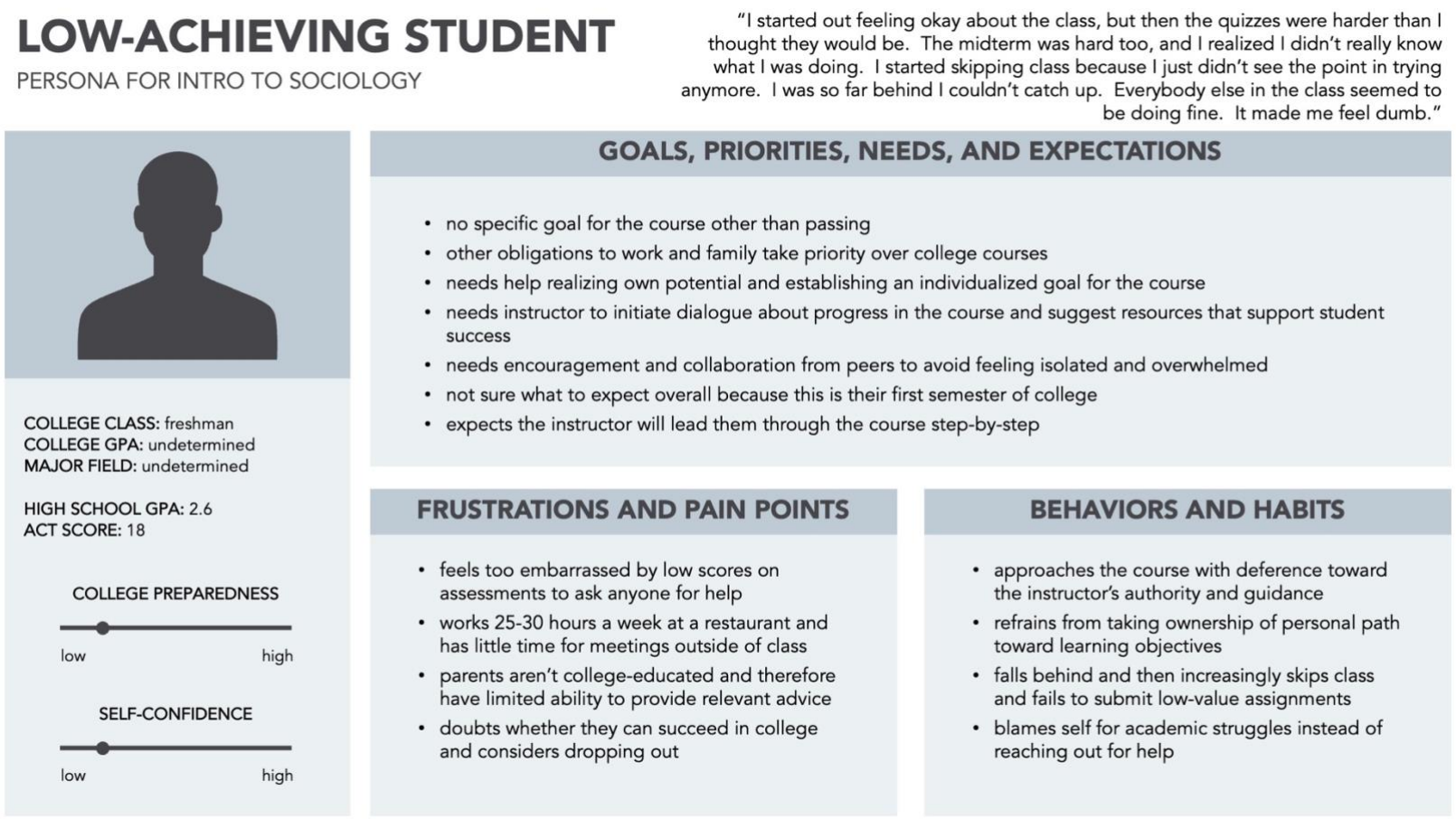

Figure 1. Persona of the Low-Achieving Student

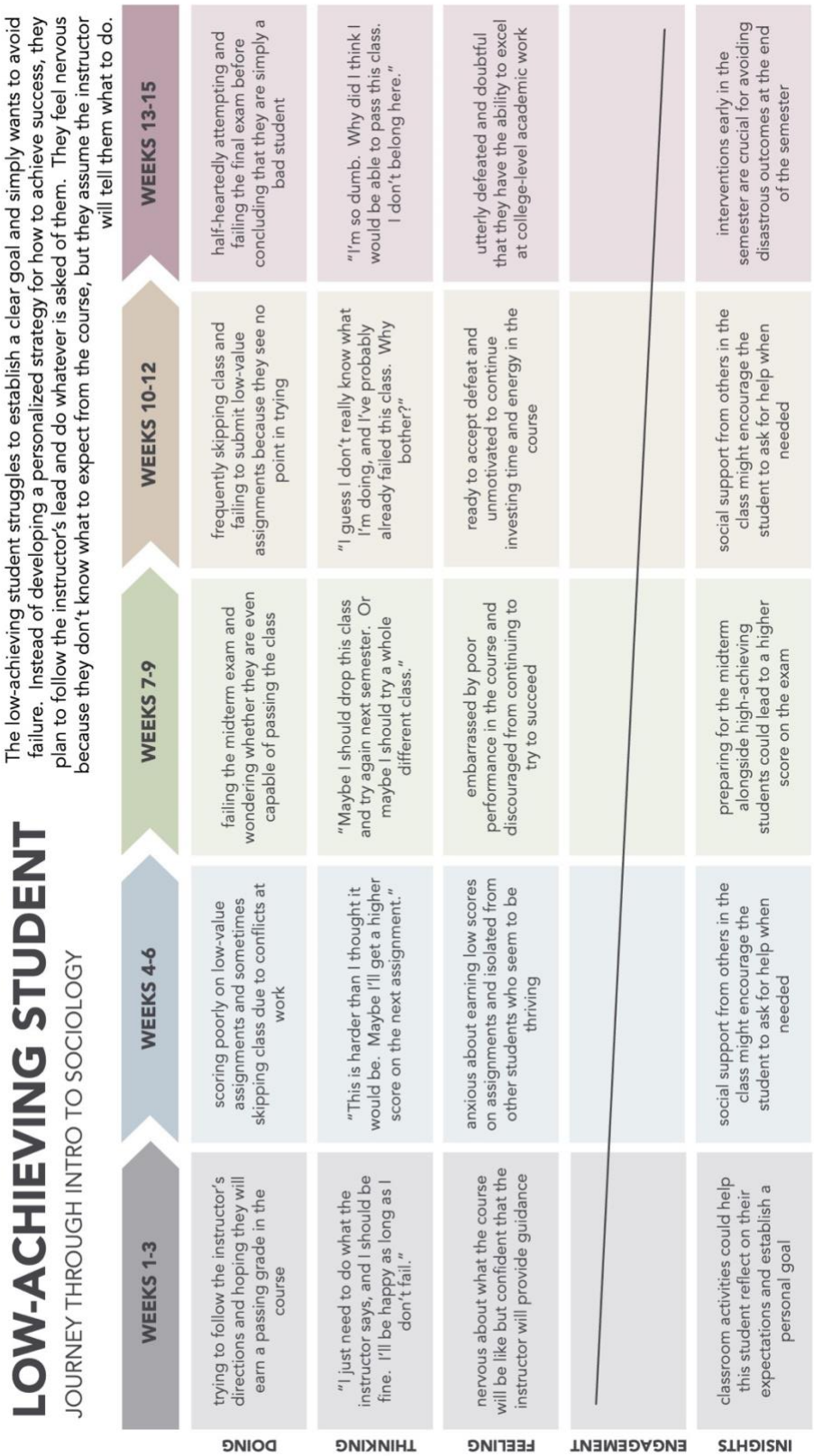

Figure 2. Journey Map of the Low-Achieving Student

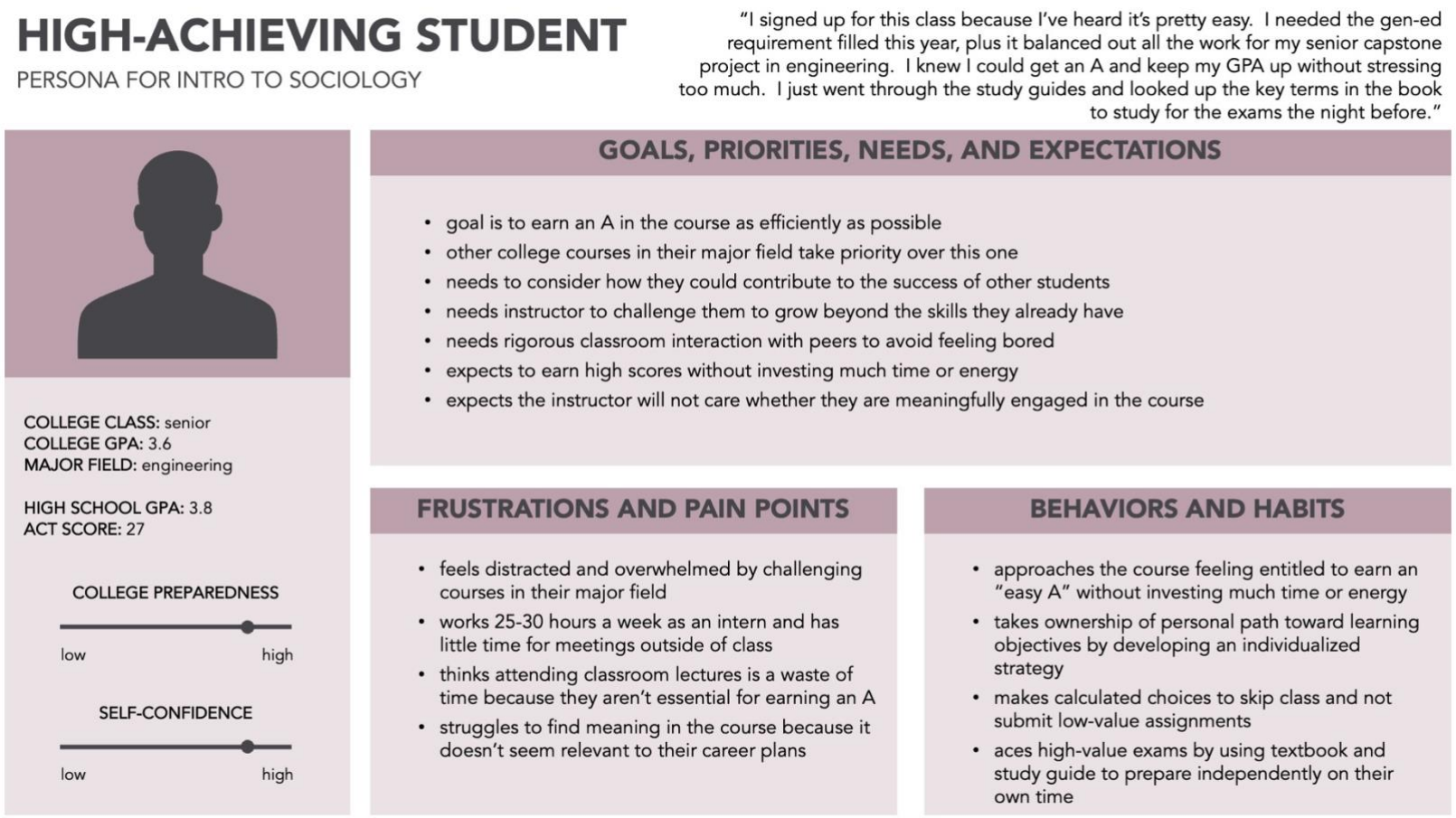

Figure 3. Persona of the High-Achieving Student

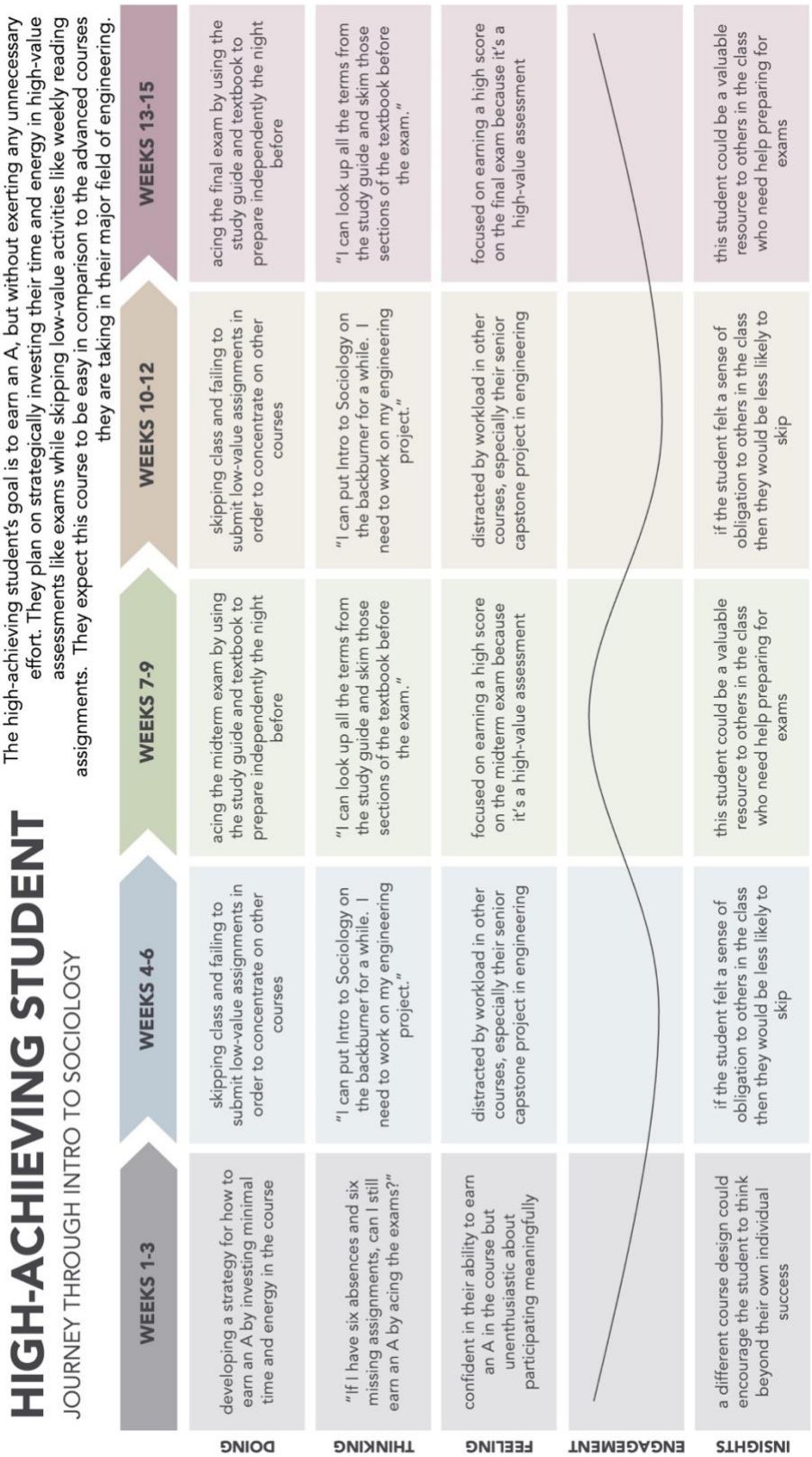

Figure 4. Journey Map of the High-Achieving Student

located on either end of the distribution (Bellwether Education Partners, n.d.). See Figure 5. Designs that meet the needs of extreme users also tend to improve the user experience for non-extreme users as well (IDEO.org, 2015).

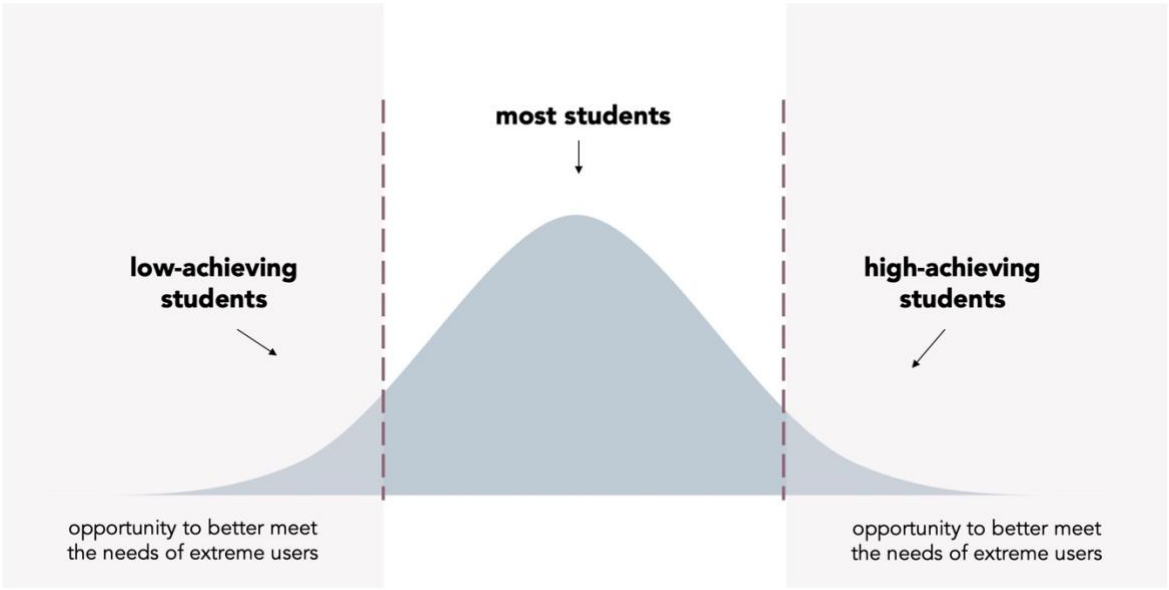

Figure 5. Extreme Users on the Bell Curve

My goal was to structure class time around activities that would increase engagement, so I used available data on each student's class standing, major course of study, and GPA to create diverse groups of five students each. Students were required to sit with their groups during class, and I guided them through structured activities to promote teamwork and group identity. At the beginning of the semester, I helped each group adopt a plan for how they would use technology to support collaboration. Some selected Google Drive or Evernote for sharing lecture notes and study guides, while others used GroupMe for chatting about homework in real time or Quizlet for testing each other's comprehension of reading assignments.

Throughout the semester, I directed students to work with their group members on formative assessments during class each week. These activities included active reading assignments, role-playing simulations, and classroom debates in which students applied theoretical concepts to empirical examples. Each student submitted their own completed assignments, but they had the help of their group members to get the job done. I also provided class time for students to reflect on their progress in the course and discuss how they felt about upcoming summative assessments. Based on these conversations, I provided detailed instructions on how to take advantage of campus resources, such as one-on-one tutoring through the library, mental health support at the counseling center, and personalized academic assistance in my weekly office hours.

Qualitative evidence collected through classroom observation showed that low-achieving students were more comfortable reaching out for help and high-achieving students were more invested in collaborating with their peers during class. Quantitative measures of class attendance and missing

assignments both improved as well, and perhaps most importantly, low-achieving students were much more likely to earn a C or better in the course. This new emphasis on group work increased participation in class discussion more broadly, but it also resulted in students sharing unsubstantiated claims related to their own personal opinions too frequently. I observed how these discussions tended to distract students from exploring sociology as a science, and over time, I realized that my solution to the problem of keeping certain students engaged had created the new problem of keeping the entire class focused.

Phase 2

My next goal was to place more emphasis on how social scientific claims are supported by the careful collection and systematic analysis of evidence. Students needed to experience the research process themselves in order to better understand how sociologists arrive at their conclusions. They needed to learn about sociology by doing sociology. In Spring 2019, I decided to teach the course like a lab science. Just as natural science courses like chemistry and biology provide students with laboratory settings to develop familiarity with the scientific method, I would create lab assignments that give students the chance to work with real data.

My idea was awarded a competitive curriculum grant through Tennessee Tech University's Quality Enhancement Plan, which involved an intensive two-day design sprint with other grant recipients. On the first day, faculty each established criteria and constraints for our respective courses and then cycled through rounds of divergent and convergent thinking to brainstorm and edit our ideas. The following day, we used backward design (Wiggins & McTighe, 2005) to map learning outcomes, instructional activities, and assessments for an iterative series of prototypes that were shared during group critiques.

My final design was implemented in Fall 2019 and included a series of 10 lab assignments for students to complete with their group members during class. See Table 1. The lab assignments effectively oriented class time around the collection and analysis of empirical evidence, which ultimately kept students focused on the methods and theories that distinguish sociology as a social scientific discipline. By spending their time doing sociology, the students avoided distractions and experienced sociological concepts, methods, and theories firsthand. Moreover, the positive impact of the new design was apparent among the entire class, not just the two types of extreme users who originally motivated the project. In other words, the effort to improve engagement among high- and low-achieving students resulted in improved engagement for numerous other students as well.

Table 1

Lab Assignments

Course Content Module	Lab Assignment
The Sociological Imagination	Drawing on the work of C. Wright Mills, choose a personal trouble that could be studied as a public issue. Connect the micro and macro by locating empirical evidence on how common or widespread the public issue is. Discuss the negative consequences of viewing the public issue as a

	personal trouble.
Methods	Operationalize the concept of religiosity by creating a survey question to measure it. Collect and analyze survey responses. Describe the problem with conflicting operational definitions of religiosity, and discuss the risks associated with relying on a single operational definition of the concept.
Culture and Media	Review research on the representation of women's bodies in media and the growing culture of body positivity. Design a sociological research study that measures the impact of "body-positive" advertising campaigns. Describe the strengths and weaknesses associated with the selected methods of data collection and analysis.
Socialization and the Construction of Reality	Design an interview guide with questions about experiences of socialization in childhood and resocialization in college. Use the guide to interview a classmate. Summarize your findings in a written paragraph that includes direct quotes from your research subject.
Groups and Networks	Create a diagram representing your own personal social network. Include 10 to 15 family members, friends, coworkers, classmates, and neighbors. Indicate whether each individual belongs to a primary group or secondary group and indicate whether each network connection is a strong tie or weak tie.
Social Control and Deviance	Use participant observation to examine how a feature of the built environment on campus functions to control behavior. Describe which behaviors it encourages or discourages and what sanctions exist to promote good behavior. Evaluate how effective the feature is at controlling social behavior.
Stratification	Complete an interactive game that simulates experiences of poverty in the United States. Explain how relatively small problems compound into larger problems for people living in poverty. Identify generalizable claims about social problems related to poverty in America.
Gender	Analyze contrasting images of ideal masculinity from 18th and 21st century England, identifying specific elements of each. Reconcile differences in norms across time and space by providing a sociological explanation of gender as a social construct.
Race	Identify a population in the United States that is frequently stereotyped. Drawing on the work of Chimamanda Ngozi

	Adichie, write a "single story" that illustrates the stereotype. Explain how the "single story" and associated stereotype function to promote ethnocentrism.
Family	Review research on family time-use in the United States since the pre-industrial period. Drawing on time diary research methods, create representative family schedules for each distinct time period. Explain how time-use reflects the culture and structure of work and family during each period.

Implications

In his influential book *The Sciences of the Artificial*, polymath Herbert Simon (1996) argued, "Engineers are not the only professional designers. Everyone designs who devises courses of action aimed at changing existing situations into preferred ones" (p. 111). By this logic, faculty members are designers in their own right. They identify the needs of the user, develop tasks for the user to complete, evaluate the efficacy of the experience, and address any pain points along the way. The very essence of teaching and learning is an iterative design endeavor aimed at moving users—or students—toward an outcome that is meaningful and transferable. Design thinking and user experience research, then, function as tools to ensure that teaching and learning are user-centered functions. They also empower faculty members to adapt to change in a reflexive and pivotal manner. Student engagement is one such problem that can be better addressed using design thinking and user experience research.

Moreover, design thinking and user experience research serve the interests of inclusivity. It is not just "typical" students who matter in our teaching and learning contexts. Previous instructional strategies and popular research methods often place focus on the majority of students with little attention given to those outside the "normal" range. Design thinking and user experience research, though, encourage us to intentionally look at the learning experiences of students on the margins in order to address their needs. We examined student engagement as a wicked problem to understand the needs of two extreme users on the margins: high-achieving students and low-achieving students. By approaching the problem this way, we inadvertently also improved the learning experiences of those situated in the center. This shift in perspective is useful for all faculty members as the needs of students continue to change (Askham, 2008; Kelley, 2022; Kimball et al., 2016).

As previously discussed, it can seem that comparing first-year students to fourth-year students is like comparing apples and oranges. Our intent in this article, however, is to demonstrate that design thinking and user experience research can be deployed to investigate and improve the needs of all students. Additionally, we acknowledge that even the most prepared student can end up as a low-achiever, and a student who had minimal preparation for college but a lot of lived experience can be a high-achiever. The personas and journey maps were developed to better understand the students' experiences in order to (re)design a more meaningful and significant learning environment.

Conclusion

Student engagement, regardless of how it is conceptualized, is a wicked problem. It is complex, layered, unsolvable. There is not necessarily a right or wrong solution; there are only good or bad possibilities. Design thinking and user experience research, then, have the potential to be innovative approaches for us to (re)design courses that improve student engagement. By understanding the contexts and needs of students, we can design courses with empathy and intention (Kelley et al., 2020). The purpose of this reflective essay was to share the experiences of one faculty member who used design thinking and user experience research to (re)design Introduction to Sociology as a lab science. It aimed to inspire others to pursue their own course (re)design projects using similar tools. We call on all teacher-scholars to reimagine their practice in order to shift the focus to the user—our students. Further inquiry, including empirical research, is needed to better understand the efficacy of design thinking and user experience research as tools for course (re)design in higher education.

References

Arce-Trigatti, A., Kelley, J., & Haynes, A. (2022). On new ground: Assessment strategies for critical thinking skills as the learning outcome in a social problems course. *New Directions for Teaching and Learning, 2022*(169), 83–97. https://doi.org/10.1002/tl.20484

Askham, P. (2008). Context and identity: exploring adult learners' experiences of higher education. *Journal of Further and Higher Education, 32*(1), 85–97. https://doi.org/10.1080/03098770701781481

Aydarova, E., Kelley, J., & Daugherty, K. (2023). "Teaching in a war zone": A collective reflection on learning from a diversity course in contentious times. *Journal of Educational Controversy, 15*(1), 1–27. https://cedar.wwu.edu/jec/vol15/iss1/3/

Barnacle, R., & Dall'Alba, G. (2017). Committed to learn: Student engagement and care in higher education. *Higher Education Research & Development, 36*(7), 1326–1338. https://doi.org/10.1080/07294360.2017.1326879

Bellwether Education Partners. (n.d.). *Design methods for education policy: Extremes and mainstreams*. https://designforedpolicy.org/extremes-and-mainstreams

Bryson, C., and Hand, L. (2008). *Student engagement* (SEDA Special Issue 22). Staff and Educational Development Association. In L. Hand and C. Bryson (Eds.), *SEDA special 22: Aspects of student engagement,* pp. 5–13.

Coates, H. (2010). Development of the Australasian survey of student engagement (AUSSE). *Higher Education, 60*(1), 1–17. https://doi.org/10.1007/s10734-009-9281-2

Cook-Sather, A., Abbot, S., & Felten, P. (2019). Legitimating reflective writing in SoTL: 'Dysfunctional Illusions of Rigor' revisited. *Teaching & Learning Inquiry, 7*(2), 14–27. https://doi.org/10.20343/teachlearninqu.7.2.2

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? *Journal of the Scholarship of Teaching and Learning, 10*(2), 1–13. https://scholarworks.iu.edu/journals/index.php/josotl/article/view/1744

Farrell, S. (2017). *UX research cheat sheet*. Nielsen Norman Group. https://www.nngroup.com/articles/ux-research-cheat-sheet/

Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses*. Jossey-Bass.

Fredricks, J., Blumenfeld, P., & Paris, A. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Gibbons, S. (2016). *Design thinking 101.* Nielsen Norman Group. https://www.nngroup.com/articles/design-thinking/

Gourlay, L. (2015). 'Student engagement' and the tyranny of participation. *Teaching in Higher Education, 20*(4), 402–411. https://doi.org/10.1080/13562517.2015.1020784

Hales, A., Cruz, L., & Kelley, J. (2019). The power of interest: Connecting the real world to the finance classroom. *Journal of Economics and Finance Education, 18*(1), 81–93. https://www.economics-finance.org/jefe/issues/JEFE-Vol-18-Num-1-Summer-2019.pdf

Hanstedt, P. (2018). *Creating wicked students: Designing courses for a complex world.* Stylus Publishing.

Haynes, A., Kelley, J., & Arce-Trigatti, A. (2021). From digital gap to digital canyon: Insights gained from pedagogical pivots in a pandemic. *Journal of Research and Practice in*

College Teaching, 6(2), 1–3. https://journals.uc.edu/index.php/jrpct/article/view/4372/3593

IDEO.org. (2015). *The field guide to human-centered design.* https://www.designkit.org//resources/1

IDEOu.com. (2020). *What is design thinking?* https://www.ideou.com/blogs/inspiration/what-is-design-thinking

Interaction Design Foundation. (n.d.). *What is UX research?* https://www.interaction-design.org/literature/topics/ux-research

Kahn, P. E. (2014). Theorising student engagement in higher education. *British Educational Research Journal, 40*(6), 1005–1018. https://doi.org/10.1002/berj.3121

Kalbach, J. (2016). *Mapping experiences: A complete guide to creating value through journey, blueprints & diagrams.* O'Reilly.

Kelley, J. (2021). The transforming citizen: A conceptual framework for civic education in challenging times. *Journal of Educational Thought/Revue de la Pensée Educative, 54*(1), 63–76. https://journalhosting.ucalgary.ca/index.php/jet/article/view/72894

Kelley, J. (2022). Voices of difference: A case study on the experiences of international students at a university in the southeastern United States. *Journal of Interdisciplinary Studies in Education, 11*(1), 28–42. https://www.ojed.org/index.php/jise/article/view/2974

Kelley, J., Arce-Trigatti, A., & Garner, B. (2020). Marching to a different beat: Reflections from a community of practice on diversity and equity. *Transformative Dialogues: Teaching and Learning Journal, 13*(3), 110–119. https://doi.org/10.26209/td.v13i3.505

Kelley, J., Arce-Trigatti, A., & Haynes, A. (2021). Beyond the individual: Deploying the sociological imagination as a research method in the neoliberal university. In C. E. Matias (Ed.), *The handbook of critical theoretical research methods in education* (pp. 449–475). Routledge.

Kelley, J., & Watson, A. (2023). Shaping a path forward: Critical approaches to civic education in tumultuous times. In T. Hoggan-Kloubert, P. E. Mabrey, & C. Hoggan (Eds.), *Transformative civic education in democratic societies* (pp. 43–51). Michigan State University Press.

Kimball, E. W., Wells, R. S., Ostiguy, B. J., Manly, C. A., & Lauterbach, A. A. (2016). Students with disabilities in higher education: A review of the literature and an agenda for future research. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and practice, Volume 31* (pp. 91–156). Springer.

Lor, R. (2017). *Design thinking in education: A critical review of literature* [Conference session]. Asian Conference on Education and Psychology, Bangkok, Thailand. https://www.researchgate.net/publication/324684320_Design_Thinking_in_Education_A_Critical_Review_of_Literature

Miller, C., Cruz, L., & Kelley, J. (2021). Outside the box: Promoting creative problem-solving from the classroom to the boardroom. *Journal of Effective Teaching in Higher Education, 4*(1), 76–93. https://doi.org/10.36021/jethe.v4i1.204

Pruitt, J., & Adlin, T. (2006). *The persona lifecycle: Keeping people in mind throughout product design.* Morgan Kaufmann.

Pusca, D., & Northwood, D. (2018). Design thinking and its application to problem solving. *Global Journal of Engineering Education, 20*(1), 48–53.

Rands, M. L., & Gansemer-Topf, A. M. (2017). The room itself is active: How classroom design impacts student engagement. *Journal of Learning Spaces, 6*(1), 26–33. http://libjournal.uncg.edu/jls/article/view/1286/1028

Rittel, H., & Webber, M. (1973). Dilemmas in a general theory of planning. *Policy Sciences, 4*(1), 155–169. https://link.springer.com/article/10.1007/BF01405730

Simon, H. (1996). *The sciences of the artificial* (3rd ed.). Institute of Technology Press.

Stensaker, B. (2018). Academic development as cultural work: Responding to the organizational complexity of modern higher education institutions. *International Journal of Academic Development, 23*(4), 274–285. https://doi.org/10.1080/1360144X.2017.1366322

Taylor, P., Wilding, D., Mockridge, A., & Lambert, C. (2012). Reinventing engagement. In I. Solomonides, A. Reid, & P. Petocz (Eds.), *Engaging with learning in higher education* (pp. 259–278). Libri Publishers.

Thienen, J., Meinel, C., & Nicolai, C. (2014). How design thinking tools help to solve wicked problems. *Design thinking research* (pp. 97–102).

Wiggins, G., & McTighe, J. (2005). *Understanding by design* (2nd ed.). Association for Supervision and Curriculum Development.

Zepke, N. (2018). Student engagement in neo-liberal times: What is missing? *Higher Education Research & Development, 37*(2), 433–446. https://doi.org/10.1080/07294360.2017.1370440

Zepke, N., & Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active Learning in Higher Education, 11*(3), 167–177. https://doi.org/10.1177/1469787410379680

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