



Projecting learner engagement in remote contexts using empathic design

Kui Xie¹

Accepted: 10 November 2020 / Published online: 17 November 2020
© Association for Educational Communications and Technology 2020

Abstract

This paper is in response to the manuscript entitled “Empathic design: Imagining the cognitive and emotional learner experience” (Tracey and Hutchinson in *Educ Technol Res Dev* 67(5):1259–1272, 2019) from a research perspective. The original manuscript provides a theoretical and empirical foundation of an instructional design approach—empathic design—where designers, during the design process, predict how learners would feel while engaging in the final design solution. Empathic design has significant implications in the “shift to digital” during the pandemic. That is, when designing the remote learning experience, instructional designers need to project into the remote contexts and predict learners’ engagement experiences in these contexts. To address the “shift to digital” remote learning, empathic design needs to be extended with two important considerations, including learners’ engagement and the context in which engagement occurs. This paper discusses how empathic design can be applied to consider four types of engagement (i.e., behavioral, cognitive, affective, and social engagement) and three contextual features (e.g., physical environment, technological, and social features) in order to best support learner experiences in the “shift to digital” remote learning during the pandemic.

Keywords Empathic design · Engagement · Learning context · Remote learning · Pandemic

The pandemic has expedited the movement of schools and universities shifting classes to remote and digital learning. These dramatic changes call for instructional designers to design effective remote learning experiences in new and diverse contexts. Tracey and Hutchinson’s (2019) *ETR&D* article entitled “Empathic design: Imagining the cognitive and emotional learner experience” responds to this call by providing a theoretical and empirical foundation of an instructional design approach—*empathic design*. Empathy refers to the ability to understand and share feelings of another person (Cooper 2011). Being empathic in the design process requires the designer to “get closer to the lives and experiences of (putative, potential or future) users, in order to increase the likelihood that

✉ Kui Xie
xie.359@osu.edu

¹ Department of Educational Studies, College of Education and Human Ecology, The Ohio State University, 29 West Woodruff Avenue, Ramseyer Hall 322A, Columbus, OH 43210, USA

the product or service designed meets the user's needs" (Kouprie and Visser 2009, pp. 437–438). Tracey and Hutchinson (2019) situated the concept of empathic design in a medical education setting. They presented empathic design as an instructional design approach where designers, during the design process, predict how learners would feel while engaging in the final design solution. Their mixed-method exploratory study examined how empathic design was reflected in instructional designers' design experience in an authentic project. The results provided empirical evidence in supporting that empathic design was an important practice in the design space. Instructional designers predicted learners' cognitive and emotional experiences (Tracey and Hutchinson 2019).

Empathic design has significant implications in the "shift to digital" during the pandemic. That is, when designing the remote learning experience, instructional designers need to project themselves into remote contexts and predict learners' engagement experiences in these contexts. Globally we are in a pandemic that is still not well controlled. Locally learners are situated in "new" learning spaces with contextual features dramatically different from traditional spaces in schools and universities. The empathic design approach needs to be extended with two important considerations that include learners' engagement and the context in which engagement occurs.

Pay attention to learning engagement

A growing body of research has suggested that learning engagement is a crucial factor related to learners' academic performance, including course grades, standardized testing scores, school and degree completion (Fredricks and McColskey 2012; Sinatra et al. 2015; Xie 2013; Xie and Ke 2011). Engagement is multifaceted including behavioral, cognitive, emotional and social dimensions (Fredricks et al. 2016).

Tracey and Hutchinson's study highlights how empathic designers predict learners' cognitive and emotional experience (Tracey and Hutchinson 2019). The empathic design approach can be extended to consider all four types of engagement in order to best support learners' experience in the "shift to digital" during the pandemic. For example, considerations for *behavioral engagement* may include how remote learners will access learning (e.g., synchronously through video conferencing and/or asynchronously through websites and learning management systems), what the mechanism of participation will be (e.g., individual reading, group discussions, and collaborative projects), and how remote learners' attention and effort will be managed (e.g., remote learners may be easily distracted by media surroundings or their siblings while learning at home; Buhs and Ladd 2001; Xie et al. 2019a, b). Consideration for *cognitive engagement* may include what kind of study strategies learners will apply in learning activities. These may include deep (e.g., elaboration) and shallow strategies (e.g., memorization) or a combination of both (Greene 2015; Miller et al. 1996). Considerations for *affective engagement* may include how remote learners will emotionally react to academic phenomena. These can include positive emotions (e.g., hope, curiosity, and enjoyment) and negative emotions (e.g., confusion, boredom, and anxiety; Pekrun and Linnenbrink-Garcia 2012; Skinner et al. 2009). Considerations for *social engagement* may include how learners will interact with peers and instructors in ways that contribute to learning (e.g., instructor-led group discussions, student-led collaborations, help-seeking, all can be achieved either synchronously or asynchronously; Finn and Zimmer 2012; Liem and Martin 2011; Xie et al. 2020), and how learners may develop social relationships and manage social conflicts (Xie et al. 2013, 2017).

Pay attention to learning context

The extant research has well-documented the strong links between features of learning contexts and learners' engagement within these contexts (Furrer and Skinner 2003; Shumow et al. 2013; Skinner et al. 2008). In designing for academic experiences, instructional designers may take it for granted that the learning contexts are school buildings and university campuses. These traditional spaces are specifically designed for academic activities. However, in the "shift to digital" during the pandemic, the contexts in which learning occurs are now situated in homes, apartments and spaces that are not typically well-structured for learning activities. These "new" spaces are diverse and can be dramatically different from one to another. Therefore, empathic designers need to forecast learners' experiences in various and diverse contexts.

Several contextual features specific to remote learning settings include physical environment, technological, and social features. For example, considerations for *physical environment features* may include what type of locations where learning activities will occur (e.g., home, library, coffeeshop, church), what the physical environment conditions will be (e.g., the availability of desks and chairs, the levels of lighting and ambient noise), how likely learners will be distracted by media surroundings or other distractions (e.g., TV, toys, and snacks; Xie et al. 2019a, b). Considerations for *technological features* may include how learners will access learning resources (e.g., the technological platforms to manage and deliver educational resources synchronously and asynchronously), whether technological devices will be accessible to support intended learning experiences (e.g., hand tools and 3D printers for maker activities), and how the availability of digital tools (e.g., tablets and apps) may influence learners' engagement (Evans et al. 2014; Lee et al. 2019; Blackley et al. 2018). Considerations for *social features* may include whether other people will be present in the learning space, what the level of human traffic will be in the space, how likely learners will be interrupted, and on the positive side, whether learning partners will be available to collaborate and seek help, and how collaboration will be achieved (e.g., one to one or in small groups).

Having these considerations of learning contexts will help empathic designers to create behavioral, cognitive, affective and social engagement experiences that are best suited in these contexts. During the pandemic, empathic design becomes particularly important when designing for remote learning. For example, designers need to consider that disadvantaged learners may or may not have the necessary access to devices and Internet in order to participate in online activities, therefore, they need to design alternative solutions for those learners. Designers may need to project themselves into those remote contexts where some learners may be emotionally stressed due to family members' sickness of COVID-19. In these situations, designers may need to prioritize to support learners' emotion and provide them with stress-free and enjoyable learning experiences. Designers may also need to be aware of the differences existing across homes and families. For example, a well-resourced family may have better a physical environment for learning (e.g., a home office) and better technological resources and parental support for learners. On the other hand, another family may have very limited resources where two or three learners have to share a digital device and have to study together on a kitchen table. Therefore, empathic designers need to consider how to leverage the limited resources to best support learners' engagement in these situations (e.g., how to turn peer distraction to peer support when multiple learners are sharing a learning space). Through the empathic design approach, instructional designers are able to forecast how learners will respond to the design strategies along with the

contextual features. This design approach helps instructional designers to produce a better-quality instructional product that improves learning experiences.

Compliance with ethical standards

Conflict of interest The author declares that he has no conflict of interest.

Ethical approval This paper does not involve any human subject.

References

- Blackley, S., Rahmawati, Y., Fitriani, E., Sheffield, R., & Koul, R. (2018). Using a makerspace approach to engage Indonesian primary students with STEM. *Issues in Educational Research*, 28(1), 18–42.
- Buhs, E. S., & Ladd, G. W. (2001). Peer rejection as antecedent of young children's school adjustment: An examination of mediating processes. *Developmental Psychology*, 37(4), 550.
- Cooper, B. (2011). *Empathy in education: Engagement, values and achievement*. London: Bloomsbury Publishing.
- Evans, M. A., Won, S. G. L., & Drape, T. (2014). Interest-driven STEM learning among youth through a social networking site. *International Journal of Social Media and Interactive Learning Environments*, 2(1), 3–20.
- Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 97–131). Boston, MA: Springer.
- Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context, and adjustment: Addressing definitional, measurement, and methodological issues. *Learning and Instruction*, 43, 1–4.
- Fredricks, J. A., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 763–782). Boston, MA: Springer.
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148–162.
- Greene, B. A. (2015). Measuring cognitive engagement with self-report scales: Reflections from over 20 years of research. *Educational Psychologist*, 50(1), 14–30.
- Kouprrie, M., & Visser, F. S. (2009). A framework for empathy in design: Stepping into and out of the user's life. *Journal of Engineering Design*, 20(5), 437–448.
- Lee, V. R., Fischback, L., & Cain, R. (2019). A wearables-based approach to detect and identify momentary engagement in afterschool Makerspace programs. *Contemporary Educational Psychology*, 59, 101789.
- Liem, G. A. D., & Martin, A. J. (2011). Peer relationships and adolescents' academic and non-academic outcomes: Same-sex and opposite-sex peer effects and the mediating role of school engagement. *British Journal of Educational Psychology*, 81(2), 183–206.
- Miller, R. B., Greene, B. A., Montalvo, G. P., Ravindran, B., & Nichols, J. D. (1996). Engagement in academic work: The role of learning goals, future consequences, pleasing others and perceived ability. *Contemporary Educational Psychology*, 21, 388–422.
- Pekrun, R., & Linnenbrink-Garcia, L. (2012). Academic emotions and student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 259–282). Boston, MA: Springer.
- Shumow, L., Schmidt, J. A., & Zaleski, D. J. (2013). Multiple perspectives on student learning, engagement, and motivation in high school biology labs. *The High School Journal*, 96(3), 232–252.
- Sinatra, G. M., Heddy, B. C., & Lombardi, D. (2015). The challenges of defining and measuring student engagement in science. *Educational Psychologist*, 50(1), 1–8.
- Skinner, E. A., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100, 765–781.
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement*, 69(3), 493–525.

- Tracey, M. W., & Hutchinson, A. (2019). Empathic design: Imagining the cognitive and emotional learner experience. *Educational Technology Research & Development*, *67*(5), 1259–1272.
- Xie, K. (2013). What do the numbers say? The influence of motivation and peer feedback on students' behavior in online discussions. *British Journal of Educational Technology*, *44*(2), 288–301.
- Xie, K., Heddy, B. C., & Greene, B. A. (2019a). Affordances of using mobile technology to support experience-sampling method in examining college students' engagement. *Computers & Education*, *128*, 183–198.
- Xie, K., Heddy, B. C., & Vongkulluksn, V. W. (2019b). Examining engagement in context using experience-sampling method with mobile technology. *Contemporary Educational Psychology*, *59*, 101788.
- Xie, K., & Ke, F. (2011). The role of students' motivation in peer-moderated asynchronous online discussions. *British Journal of Educational Technology*, *42*(6), 916–930.
- Xie, K., Lu, L., Cheng, S. L., & Izmirlı, S. (2017). The interactions between facilitator identity, conflictual presence, and social presence in online collaborative learning. *Distance Education*, *38*(2), 230–244.
- Xie, K., Miller, N. C., & Allison, J. R. (2013). Toward a social conflict evolution model: Examining the adverse power of conflictual social interaction in online learning. *Computers & Education*, *63*, 404–415.
- Xie, K., Vongkulluksn, V. W., Lu, L., & Cheng, S. L. (2020). A person-centered approach to examining high-school students' motivation, engagement and academic performance. *Contemporary Educational Psychology*, *62*, 101877.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Kui Xie is Ted and Lois Cyphert Distinguished Professor and director of The Research Laboratory for Digital Learning in College of Education and Human Ecology at The Ohio State University. His research focuses on K-12 Technology Integration and Teacher Professional Development, Motivation and Engagement in Digital Learning, Technology Intervention and Learning Environment, Learning Analytics and Research Methods.