

Using survey questions to identify and learn more about those who exhibit design thinking traits



Jacquelyn Blizzard, Denver Schools of Science and Technology Public Schools, 2000 Valentia St, Denver, CO 80238, USA

Leidy Klotz, Glenn Department of Civil Engineering, Clemson University, 208 Lowry Hall, Clemson, SC 29634, USA

Geoff Potvin, Department of Physics and STEM Transformation Institute, Florida International University, Miami, FL 33199, USA

Zahra Hazari, Department of Teaching & Learning and STEM Transformation Institute, Florida International University, Miami, FL 33199, USA

Jennifer Cribbs, School of Teacher Education, Western Kentucky University, Bowling Green, KY 42101, USA

Allison Godwin, Department of Engineering Education, Purdue University, West Lafayette, IN 47907, USA

Questions intended to identify design thinking traits were developed and tested on a national survey distributed to U.S. college students. By applying exploratory factor analyses and regression models to the survey data, nine of the questions were mapped to five related characteristics of design thinking: collaboration, experimentalism, optimism, feedback-seeking, and integrative thinking. Survey questions alone cannot fully identify the qualitative traits of design thinkers, but these nine questions do enable basic exploration of compelling relationships between design thinking traits and other variables. Our analyses found design thinking traits correlated with higher achievement; with a desire for careers helping others and solving societal problems; and with recognition of and desire to address sustainability obligations.

© 2015 Elsevier Ltd. All rights reserved.

Keywords: design thinking, design behavior, research methods, sustainability

Corresponding author:
L. Klotz
leidyk@g.clemson.edu



Researchers have long been interested in design thinking and other terms used to express similar concepts. *Design Thinking* is the title of Rowe's 1987 book on the topic. An initial 'Design Thinking Research Symposium' was held at Delft University of Technology in the Netherlands in 1991 and 2014 saw the 10th of these Symposia, which have been held at leading research Institutions all over the world ([Open University Design Group, 2014](#)). This *Design Studies* journal has devoted a 2013 special issue, edited by Paul Rodgers, to 'Articulating Design Thinking' and a 2011 special issue, edited by Susan Stewart, to 'Interpreting Design

www.elsevier.com/locate/destud
0142-694X *Design Studies* 38 (2015) 92–110
<http://dx.doi.org/10.1016/j.destud.2015.02.002>
© 2015 Elsevier Ltd. All rights reserved.

Thinking.’ Dorst’s 2011 *Design Studies* article provides an excellent detailed review of the history of the concept in research. In recent years, the design thinking concept has reached a broader audience as practitioner/educators like Tim Brown demonstrate and communicate the value of design thinking with examples of applications to fields including management and service industries (Brown, 2008).

Just as there are various terms for design thinking, there are multiple definitions for each of these terms (Blizzard & Klotz, 2012; Charnley, Lemon, & Evans, 2011; Coley & Lemon, 2009). This ambiguity should be embraced; a constant definition is not necessarily needed, or even desirable. Indeed, we agree with Dorst (2011), who points out the dangers of trying to oversimplify concepts for study in a field that ‘cherishes multiple perspectives and rich pictures.’ Based on the literature, design thinking traits include, but are not necessarily limited to: asking questions and seeking input from others to make decisions and change directions; analyzing at a detailed and holistic level to develop novel solutions; resilience to not back down from challenging problems; predisposition to ask questions and take new approaches to problem solving; and the ability to work with many different disciplines. Again, these are just some commonly mentioned design thinking traits, not a strict definition. The evolving concept of design thinking and the related terms and definitions require continuous study. This is occurring in practice (e.g., Brooks, 2010; Martin, 2009) and among students in various engineering and architecture disciplines (e.g., Goldschmidt & Rodgers, 2011; Adams, Daly, Mann, & Dall’Alba, 2011; Carmel-Gilfilen & Portillo, 2010).

While there may never be agreement on a single definition of design thinking, the need for design thinkers is widely recognized (e.g., (Brown, 2008; Charnley et al., 2011; Coley & Lemon, 2009; Dym, 2008; Dym, Agogino, Eris, Frey, & Leifer, 2005)). The research we present in this paper, and research that builds on it, can help advance understanding about design thinkers – those who exhibit design thinking traits.

While the nuanced, diverse, and evolving conceptions of design thinking must be studied and kept in mind, quantitative approaches to identify design thinkers are also a worthy goal for research. This article describes the design, testing, and analysis of survey questions to measure design thinking traits, and the subsequent statistical analysis which demonstrated that those with these traits are also more likely to possess qualities such as career outcome expectations and sustainability beliefs and actions that make them well-suited to address humanity’s biggest challenges.

1 Background and method

This study was comprised of two major components: (1) developing, testing, and refining design thinking survey questions and, (2) using the preliminary

Download English Version:

<https://daneshyari.com/en/article/6726830>

Download Persian Version:

<https://daneshyari.com/article/6726830>

[Daneshyari.com](https://daneshyari.com)