Chapter 11
Why Is Data So Hard?
Challenges, Solutions, and Future Directions

Kristin Kennedy
Arizona State University, USA

ABSTRACT
Why is it always so complicated to acquire data to assist with making decisions? This chapter will provide some background as to why data is so challenging, specifically with the intent to create empathy for what those who are responsible for data go through on a regular basis. By first understanding the current issues, one can begin to work on solutions. Many books and documentations deal with all of the latest trends in data, but this chapter will attempt to explain the most relevant terms and concepts of the day. After explaining the state of data and all of the intricacies involved, this chapter will propose recommendations for how to create a data-driven culture that will increase ease and efficiency of the use of data for any institution.

INTRODUCTION
The 2018 New Media Consortium Horizon Report talks about six trends, six challenges and six developments in higher education technology (Becker et al., 2018). The six trends listed are Machine Learning, redesigning learning spaces, the proliferation of open educational resources, the rise of new forms of interdisciplinary studies, advancing culture of innovation, and cross-institution collaboration. The six challenges in technology comprise authentic learning experiences, improving digital literacy, adapting organizational designs to the future of work, advancing
Why Is Data So Hard?

digital equity, economic and political pressures, and rethinking the role of educators. The six developments that are underway or planned include analytics technologies, makerspaces, adaptive learning technologies, artificial intelligence, mixed reality, and robotics. The time to adoption for these is one, three, and five years, respectively (Becker et al., 2018). All of these trends, challenges, and developments will involve one common thing, data.

Many believe that a data revolution is coming, claiming that data is going to transform the way in which we live (Mayer-Schonberger & Cukier, 2013). Specifically, a paradigm shift is happening that will bring about disruptive change (Gagliardi, Parnell, & Carpenter-Hubin, 2018). Big Data, Machine Learning, Artificial Intelligence, Business Intelligence, Analytics, Augmented Analytics, Advanced Analytics, and Data Lake, and the list continues, all of these will change the way we live our lives. A quick search in Amazon Books for Big Data brings back over 6,000 results, with a search for artificial intelligence returning over 30,000 results, and one for Machine Learning retrieving over 10,000 results. With so many books written about these subjects, one can find all kinds of differing opinions, from “Big Data: A Revolution that Will Transform How We Live, Work and Think” (Mayer-Schonberger & Cukier, 2013) to “Big Data, Big Dupe, A Little Book About a Big Bunch of Nonsense” (Few, 2018). How in the world then can a leader in higher education hope to make sense of it all?

As a leader in higher education, how can one know what to do if the experts cannot even agree on certain ideas and definitions? This chapter will attempt to explain the above issues in ways that, hopefully, are easy to understand and will take some of the mystery out of the rhetoric. It will provide the reader with a better understanding of the complexities of data in higher education as well as a more optimistic perspective on its uses and future possibilities. The chapter will also explain why things are not as easy as one might expect, and in the end, provide some suggestions on ways in which to get to the desired future destination.

BACKGROUND

In order to understand some of the complexities of the present, it is important to know the history of the past; this is significant because many of these challenges are cultural in nature and require an understanding of the current culture. In the early nineties, data was just plain hard to get. It required coding and a certain skill set to even understand where to start (Kennedy, 2018). Once one received the data, it was often limited in scope and distributed via spreadsheets or green bar printouts. The data often came from the office of Institutional Research (IR), or if there was an Information Technology Office (IT) it might have come from there. IR offices began
Related Content

Cultivating Leaders from Within: Transforming Workers into Leaders
www.igi-global.com/chapter/cultivating-leaders-within/78113?camid=4v1a

Fostering Creative Problem Solvers in Higher Education: A Response to Complexity of Societies
www.igi-global.com/chapter/fostering-creative-problem-solvers-in-higher-education/166471?camid=4v1a
Contributory Factors of Students Satisfaction When Undertaking Group Work, a South Africa Higher Institution Case Study: Factors of Satisfaction When Undertaking Group Work
[www.igi-global.com/chapter/contributory-factors-of-students-satisfaction-when-undertaking-group-work-a-south-africa-higher-institution-case-study/148198?camid=4v1a](www.igi-global.com/chapter/contributory-factors-of-students-satisfaction-when-undertaking-group-work-a-south-africa-higher-institution-case-study/148198?camid=4v1a)

Metacognitive Strategies in Higher Education: Development of Spiritual Intelligence Strategies Within Training of the Academic Staff
[www.igi-global.com/chapter/metacognitive-strategies-in-higher-education/175781?camid=4v1a](www.igi-global.com/chapter/metacognitive-strategies-in-higher-education/175781?camid=4v1a)