Understanding the University Student Experience Through Big Data Analytics

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ABSTRACT

Despite best efforts, the student experience remains poorly understood. One under-explored approach to understanding the student experience is the use of big data analytics. The reported study is a work in progress aimed at exploring the value of big data methods for understanding the student experience. A big data analysis of an open dataset of student comments is being undertaken. The first and simplest use of big data analytics is for the identification of high frequency keyword groups, which, without big data analytics, would be extremely time consuming. However, the lack of context surrounding keyword groups severely limited the ability to draw meaningful conclusions and highlighted the need for human intervention in the analysis process. Future work includes sentiment analysis. This initial work is an impetus for further exploration of big data analytics methods in qualitative contexts, especially in dynamic contexts where rapid data analysis can form a basis for timely interventions.

KEYWORDS

Big Data Analytics, Category Classification, Higher Education, Keyword Analysis, Student Experience

INTRODUCTION

Understanding the student experience in higher education is important to both the institutions and the students. Positive experiences for the students during their studies are crucial as these can highly impact student motivation, engagement, learning outcomes, and even their decision to continue in the same institute for future studies or to leave (Tinto, 2017; Stanton et al., 2016). The quality of the student experience is usually evaluated based on factors such as student satisfaction, retention rates, academic progress, and post-graduation career outcomes. (Heron, 2020; Sabri, 2011). Aware of the importance of providing positive student experiences for students and institutions, universities are increasingly seeking to understand the student experience as a basis for providing learning experiences that enhance and support student well-being and satisfaction. Achieving high levels of student satisfaction positively influences student engagement and retention, consequently contributing to the timely completion of their undertaken program (Stanton et al., 2016; Shah et al., 2020; Bobe & Cooper, 2020; Raaper et al., 2022). Understanding and supporting the student experience is critical to achieving the strategic goals

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of attracting and retaining students, and remaining competitive Stanton et al., 2016). However, the student experience remains incompletely understood, despite its well-acknowledged importance, and the many efforts aimed at understanding it, usually via surveys (Shah & Pabel, 2020). This situation has motivated the authors to explore methods other than surveys to address this gap big data analytics is commonly applied in domains such as marketing to understand customer or user experience, but to date, big data methods are underexplored as a method for understanding the student experience.

In the present paper, the authors focus on the learning experience of university students and the role that big data analytics may play in helping to better understand it. The paper begins with a brief discussion of the advantages and disadvantages of commonly used traditional survey methods for collecting data about the student experience. Big data analytics is described and why big data analysis may be a useful tool for understanding the student experience is discussed. The big data analytics method used by the authors is then described. The reported study is a work in progress and preliminary results are presented.

THE STUDENT EXPERIENCE

The university experience is a complex and multidimensional journey shaped by various factors that impact students' overall satisfaction, engagement, and success. Understanding these factors is crucial for universities to create supportive and enriching educational environments. Research has identified a number of factors influencing student's experience (Gopal et al., 2021; Awidi et al., 2019; Al Kurdi et al., 2020). One of the factors is academics, which plays a pivotal role in shaping students' experiences. The quality of teaching, including pedagogical approaches, instructor-student interactions, and feedback, significantly impacts students' engagement and motivation (Chickering & Gamson, 1987). Additionally, curriculum design, including the relevance and coherence of courses, flexibility, and opportunities for experiential learning, influences students' sense of achievement and intellectual growth (Kuh et al., 2010).

Previous studies emphasize the importance of effective teaching and student engagement in shaping the student experience (Ta, Hien Thi Thu, et al., 2023; Hope, 2012). Research suggests that innovative teaching methods, interactive classroom activities, and supportive instructor-student interactions positively influence student satisfaction, motivation, and learning outcomes (McKinney et al., 2019). Engaged students tend to be more committed, involved, and satisfied with their educational experience leading to higher retention rates and academic achievement (Kahu, 2013).

Another factor contributing to the student experience is the social and environmental context in which students learn and live. Recent research (Strayhorn, 2019) emphasizes the significance of campus climate and inclusivity in promoting student engagement and success. A positive campus climate, characterized by a sense of belonging, respect for diversity, and equitable opportunities, enhances students' well-being and academic achievement (Strayhorn, 2019). Studies show that an inclusive campus climate fosters higher levels of student satisfaction, persistence, and overall success (Smith et al., 2021).

Lastly, the availability and quality of institutional support and services play a crucial role in students' experience. Adequate academic advising, mentoring, and career services contribute to students' academic and career development (Ender & Newton, 2000). Additionally, institutional policies and practices, including fairness, transparency, and responsiveness, shape students' trust and perceptions of institutional support (Hurtado et al., 2012).

The Survey-Based Approaches

While surveys offer advantages in terms of data collection and analysis, they also possess certain limitations (DeShields et al., 2005; Ferreira & Santoso 2008; Esarey & Valdes, 2020). Traditional surveys typically involve a sample population, limiting the generalisability of the findings. Moreover, traditional surveys often fail to capture the diverse range of student experiences, perspectives, and

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