ENHANCING DATA SCIENCE EDUCATION THROUGHOUT INDIANA

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Abstract

Data science is the process of analyzing authentic real-world data sets to extract meaning, glean context, and seek insight into how to improve society. Data science promises new insights, helping transform information into knowledge that can drive science and industry (Berman et al., 2018). In recent years, employer demand for employees with the visualization, mathematical, and computational programming skill sets for this expanding niche has led to the introduction of new programs and coursework at both the K-12 and collegiate level. This research brief examines one such partnership in Indiana funded by the Lilly Endowment partnering Purdue University Fort Wayne (PFW) and the Fort Wayne Community Schools.

Authentic Data Analyzed Via Project-Based Learning Motivates Students to Learn

Because of the increased need for data-based outcomes, a shift to educating students in data science is necessary. When real world data sets are provided by local employers for students to analyze in a Project-Based Learning context, students are motivated to learn strategies that may help their community (Remijan, 2017; Virtue & Hinnant-Crawford, 2019). To fulfill such a need, Purdue University Fort Wayne (PFW) has begun a data science initiative in partnership with Snider High School. The Lilly Endowment awarded the Purdue System a $10 million grant to enhance data science education through the Indiana Data Mine Initiative. As part of this grant, PFW has been working with Snider to develop and expand data science educational opportunities for students by creating an experiential learning curricular approach in which students learn introductory data science skills and coding.

The vision has been for the students to receive data from local businesses with questions the employer wants answered from the given data set. One semester into this project, multiple businesses have provided data that have and are being analyzed to answer one or more questions of interest to the business. The data sets have covered a breath of areas including sales, customer engagement, product development, and other critical topics necessary for businesses to find success in highly competitive marketplaces. Once students have found consensus and created meaningful visualizations of the data, they present their findings to peers, and then most often again the business administrators. These opportunities have exposed students to real questions and related problems to solve for their community and in turn helped advance their presentation skills. In addition, students have developed data science skills using R Studio on the free platform Data Science in a Box. In the initial year, we now have seventeen students enrolled in a two-semester data science course with only five students having prior coding courses. Student enrollment data demonstrates that we are growing the field of data science because twelve students are enrolled in this year-long course despite their having no prior coding experience. Having these experiences and honing these skills while high school students bode well not just for their future employment, but also our country's success in a competitive global economy.

References

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