

Instructional Scenario

Student Self-Efficacy Factors



Course/Duty Area: Artificial Intelligence Fundamentals/Exploring Data and Machine Learning

Scenario:

School administrators have decided to study student self-efficacy and have come to you for help. Your task is to collect data from students at your school to identify which factors are most associated with students' perspective of themselves as a "good student."

Big Question:

What do students who view themselves as "good students" do differently than students who don't view themselves as good students?

Focused Questions:

- What data needs to be collected from students to learn about the factors most associated with positive student self-efficacy?
- What questions could be used to collect the identified data?
- What types of data will the questions collect?
- What are the best tools for storing and analyzing the data collected?
- What visualization techniques will help humans understand the data?
- What machine-learning approaches would be useful for creating a model to predict the self-efficacy of students who did not respond to the survey?

Student Project or Outcome:

First, students will create a data collection tool and use that tool to collect anonymous data from fellow students at their school. Once the data is collected, students will clean the data, analyze it to identify factors most strongly associated with student self-efficacy, and create data visualizations that highlight those factors.

Using their data analysis results and visualizations, students will create an executive summary that details their data collection process, data analysis findings, and recommendations. Lastly, students will use a machine-learning algorithm to create a model that predicts student self-efficacy using specific student data.