PerformanceVis: Homework & Exam Analytics Dashboard for Inclusive Student Success

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ABSTRACT: PerformanceVis is a visual analytics tool developed for analyzing and visualizing students' chemistry course performance through the lens of time, homework and exams, and demographic and academic background. The Introduction to Chemical Principles course is a required course for all college of science and college of engineering programs at the university and is the second largest course on campus with approximately 1,000 freshmen taking the course. This engaging tool includes four main views (overall exam grade pathway, detailed exam grade pathway, detailed exam item analysis, and overall exam & homework analysis) that are dynamically linked together for user interaction and exploration. PerformanceVis enables instructors to improve their course and assessment design by visualizing students' perceived difficulty level and topic correlation between assignments and exams. It assists instructors and administrators in evaluating the impact of a special treatment program (cohort) by reviewing the performance of regular, control, and cohort students overall and by exam. The right side of Figure 1 shows a view of the gender performance gap for those students who scored a C or below course grade. The left side of Figure 1 shows Exam 1 item analysis for each test question.
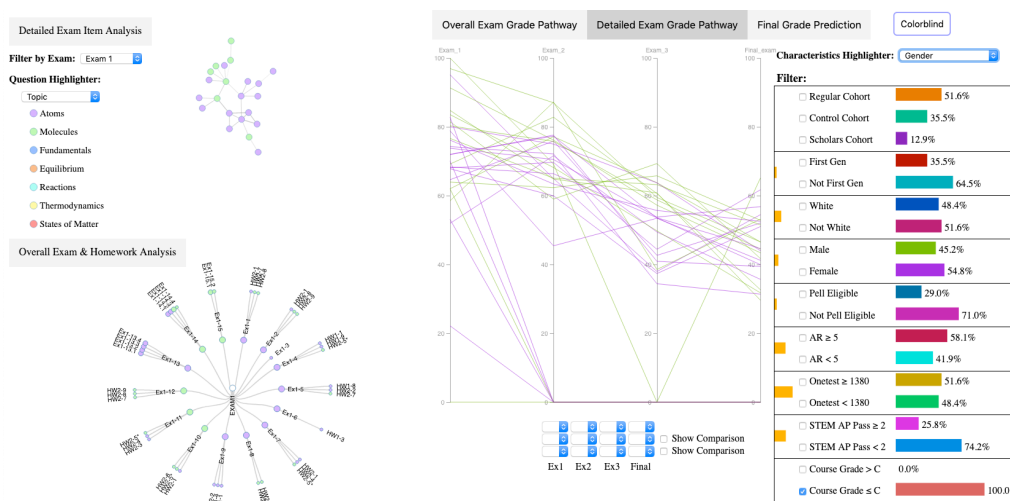
Figure 1: PerformanceVis: Homework & Exam Analytics Dashboard Screenshot

Link to the interactive demo video:

https://youtu.be/5ub7BxYbb5k