



Data Driven Learning: Understanding How Students Utilize a Data Dashboard

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BACKGROUND

- Data is becoming cheaper and easier to collect, organize, and display across all industries.
- Data dashboards are a promising technology that are becoming more accessible to create and use in medical education.¹
- A conceptual framework for analyzing and interpreting learning analytic dashboards has been created outside of medical education, but studies describing the implementation, use, and impact of dashboards are limited.

OBJECTIVE

To Create a visual display of all student performance data to help students identify areas of strength and weakness and guide learning.

METHODS

- An exploratory sequential mixed-methods design was utilized to gather first qualitative data and subsequent quantitative data
- Using a phenomenological design, interviews were conducted with medical students who had utilized the dashboard.
- Interviews were semi-structured, recorded, and transcribed.
- Data were analyzed using the constant comparative method.
- Several Likert style items were developed and administered to the next class of students who used the dashboard. Descriptive statistics were calculated and used to compare students who reported that the dashboard led to changes in their studying as compared to those who did not.

RESULTS

- Preliminary analysis of interviews identified 19 codes in 3 themes: Looking at the Data, Making Meaning from the Data, and Acting on the Data
- Of the 179 students who completed the survey,
 - 39 students (24.1%) reported that the dashboard led to changes in their studying
 - 60 (46.2%) students reported gaining new insights from the dashboard at least once
- Compared to students who reported no changes in their studying, those who did were more likely find reviewing longitudinal data over the year and seeing data on performance for specific disciplines useful (ps = <0.0001) and to report that the dashboard provided insights into their performance (p = <0.0001).

Figure 1: Student data dashboard with essentials core performance organized by discipline

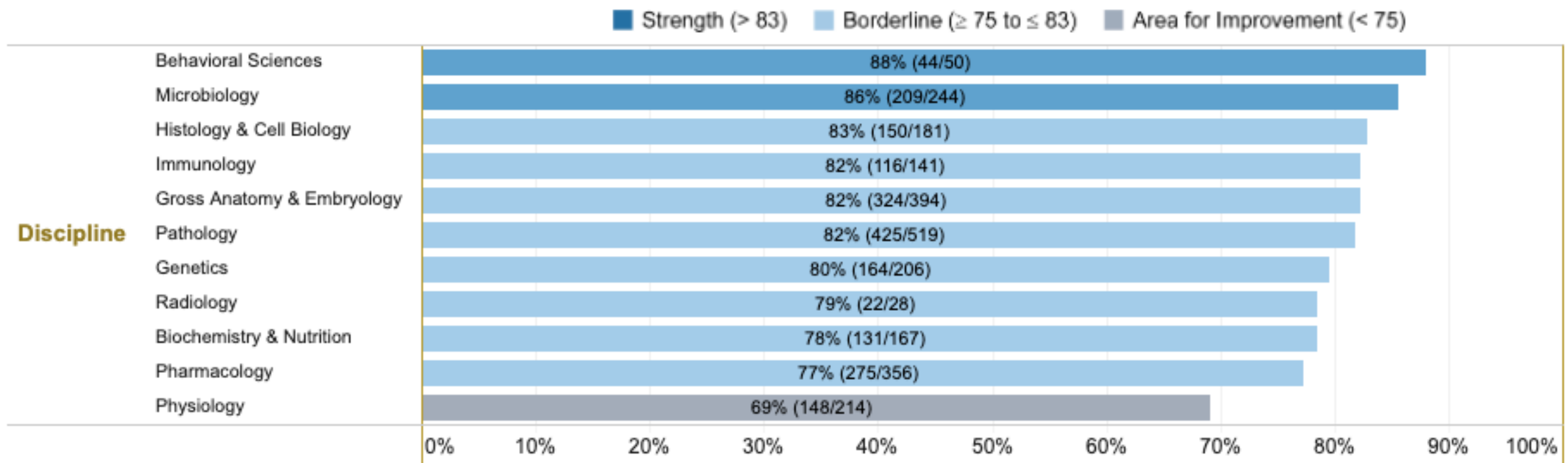


Figure 2: Student data dashboard filtered by borderline performance (75%-83%) by system

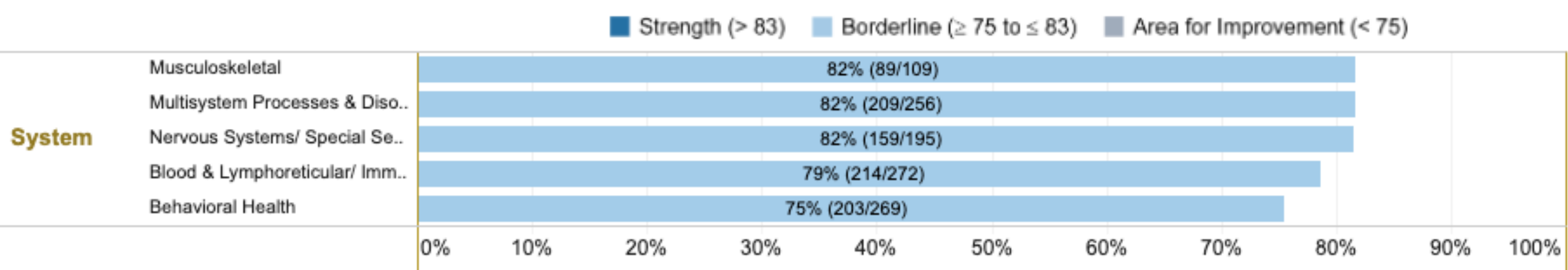
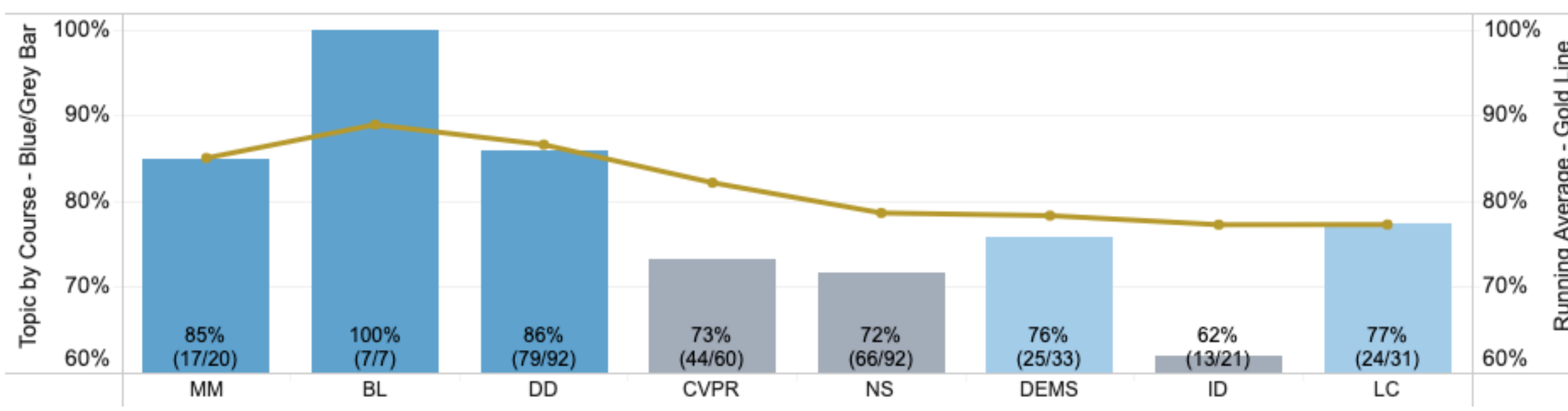


Figure 3: Performance over time in a specific discipline (ex. Pharmacology)



Additional Data Dashboard Features

Select Data View

- ☒ Discipline
☐ System

View Course Grades

Select Performance Level

- ☒ (All)
☐ Area for Improvement (<75%)
☐ Borderline (75% to 83%)
☐ Strength (>83%)

View Dashfolio User Guide

View Demonstration Video

- Students can sort their data by system or discipline, and filter data by strengths, areas of improvement, and borderline scores.
- Students have instant access to every exam grade in every course, as well as guides for how to use the dashboard.

DISCUSSION

Understanding how students use data dashboards to guide learning can help maximize their utility. The results highlight distinctions between students looking at, making meaning from, and acting on performance data. The survey results suggest that only a small percentage of students actually act on the data and identified factors that influence the ultimate impact on behavior. Focused training in data literacy and faculty guidance in supporting students to understand the data in a dashboard is needed to maximize the utility of dashboards and empower students to use data to guide growth throughout their career..

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