

Pre/Post Assessment Plan

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My background in data analytics drives my desire to make research-backed, data-driven decisions in my instruction. The most easily quantifiable practice for collecting this data is the pre/post assessment approach. However, it is worth emphasizing that over-testing students is antithetical to my teaching philosophy. Therefore, testing, in my classroom, is a standardized tool for tracking growth, whereas project-based learning is my primary method for evaluating and promoting student performance.

According to David Dellwo's 2010 study, a standard pre/post assessment strategy does not effectively capture intermediate knowledge loss or acquisition the way a multi-stage approach can. This theory aligns well with my current routine of offering one-to-two quizzes or other formative assessments within a unit. The timeline, for example, may look like a pre-assessment at the beginning of the unit, a brief quiz every two weeks, followed by a post-assessment at the end of the unit that is nearly identical to the pre-assessment.

Dwello also provides metrics for analyzing the results garnered by this strategy. While I currently feel relatively effective at the data analysis portion of each individual assessment, I lack in compiling and synthesizing longitudinal data for my students. For that, I have relied heavily on the standardized tests they have to take for the district, which are imperfect and not directly aligned to the standards in my course. Dwello suggests measuring the mean percent change in scores for every stage, measuring the normalized gain or loss throughout the unit. Then, one can grade their course's overall effectiveness by the net gain or loss. To take this a step further, one could also disaggregate the data by

class, student, or standard using data visualization software to determine if the aggregate data hides significant outliers that need to be addressed.

I am interested in automating this style of data analysis and allowing that to influence my instructional practices, like reteaching and test preparation. One of my biggest criticisms after two years of teaching has been the misuse of the phrase “data-driven.” I believe that instructors suffer from data overload and spend more time synthesizing data than investigating the story that underlies the numbers and designing strategies influenced by those narratives. This challenge is correlated to a lack of reflection, which is rooted in the reality that educators have more tasks on their plates than there are hours in the day. When something must go, I find that reflection is the easiest option to justify.

Therefore, in my own classroom, I strive to make progress in prioritizing the commitment of “data-driven instruction.” My first step will be devising systems to collect and process data seamlessly based on Dwello’s research. Once I believe these systems are refined, my goal is to scale them to team-wide processes to aid other math instructors’ data strategies. At that point, I believe that I will be able to bridge the divide between educational data analysis and pedagogical development.

References

Dellwo, D. R. (2010). Course Assessment Using Multi-Stage Pre/Post Testing and the Components of Normalized Change. *Journal of the Scholarship of Teaching and Learning*, 10(1), 55–67.