Does Assessment for Learning Actually Work in Biomedical Informatics Courses for Undergraduate Students?

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Abstract

Introduction: The COVID-19 pandemic precipitated the pending change in teaching and learning paradigm in this century. Educators had to re-think and broaden their approaches, adapt the courseware for synchronous and asynchronous teaching, incentivize the resilience of their students while also self-motivate themselves. For helping learners to develop higher order thinking and be successful in further high-stakes examinations, formative activities and assessments should be employed, i.e. learners should practice what they still have to learn, rather than what they already know. Such formative, deliberate practice would help students develop their meta-cognition abilities and subsequently direct their own learning process. Conceptualizing and designing such courseware is not trivial and might need an iterative approach. In order to gauge the current situation, we analyzed the assessment results (both formative and summative) of two courses we had taught completely on-line during the first semester of the academic year 2020-2021. *Participants and Methods*. Undergraduate medical students enrolled in courses of biomedical informatics (first year, 4 credits, 97 participants) and biostatistics (second year, 2 credits, 96 participants) accomplished all activities, and sat the three formative and one summative examinations. Their results were converted into z-scores; trend and correlations between them were sought. The three assessments distributed along the semester had increasing complexity and were intended to build up on each other. *Results and Discussion*. Low values for Spearman coefficient of correlation were found: -0.14 – 0.198 (all p-values > 0.05) for informatics; 0.193 – 0.746 (some p-values <0.001) for biostatistics. Interestingly, the scores in the final examination would correlate with early formative assessments, rather than with later more complex tests. While the final test's scoring percent was very high for both courses (93.51 ± 4.44 and 81.49 ± 7.22), this weak correlation with deeper assessments should call for debate and intentional reflection on educators' side.

Keywords: Education; Medical Information Science; Assessment Methods; Formative Practice