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The importance of implementing diverse assessment methods in geosciences to promote inclusion

Sudeshna Basu^{1,2}

¹Chemical Engineering, University College London, United Kingdom (sudeshna.basu@ucl.ac.uk)

²Earth Sciences, University College London, United Kingdom

Geoscience is being increasingly embedded in collaborative research related to the management of natural resources and the environment, alongside engineering and social sciences. Masters students exercise rigorous choices in selecting their study courses that enhance employability, considering carefully the kind of learning experience they are likely to have. The interdisciplinary M.Sc. programme 'Global Management of Natural Resources' (in Chemical Engineering, University College London, UK) has generated a lot of interest since its initiation in 2016. The geoscience module 'Geology for Global Managers and Engineers' (GGME), is a part of the above taught programme, studied by students from diverse academic background considered in four sets, namely, set 1 (geologists), set 2 (chemists, environmentalists, ecologist) set 3 (engineers) and set 4 (others, without science background such as economics and finances).

Traditional assessment methods for geology include written examination papers, field trip reports and essays and, practical based on hand specimen and microscopic studies. But, the role of assessment is no longer solely associated with awarding a grade but, should enhance inclusion and serve as effective teaching tools (Hounsell et al., 2005; Kaur et al., 2017). This can be better achieved by applying diverse assessment methods taking into account the different skill sets of the students, ensuring fairness and consistency with consideration of increased workload for both lecturers and students (Brown, 2012). Here we studied the effectiveness of multiple assessment for the taught GGME module including a combination of software based coursework, fieldtrip activities and hands on specimen studies, spread over the term, followed by an end of term multiple-choice questions' based sit-in examination.

Our study indicates that prior academic background did affect students' scores in the assessments. The students from set 4 had the lowest average score, although ~ 15 % attained higher marks comparable to set 1, attributable to a combination of factors including the set multiple assessments. The students performed better in course works involving smaller learning components where there was more time for reflection. But, they scored lower when the course works were set too early or late during the term. Assessing the same learning outcome by more than one method with provided feedback worked as effective, continuous learning activities with a reduced attainment gap in the final examination between the students from sets 1 and 4, for components already covered in the course works. Noteworthy that although the students were

from diverse ethnic background, there was no attainment gap attributable to their ethnicity. A combination of assessment methods with both individual and group work components proved to be effective in closing any attainment gaps between diverse groups of students.

References

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