

FORMATIVE AUTHENTIC ASSESSMENT TO DEVELOP COMMUNICATION COMPETENCIES AMONG FIRST-YEAR SCIENCE STUDENTS

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BACKGROUND

SCIE1100 Advanced Theory and Practice in Science is a first-year course taken by approximately 100 high-achieving students in the Bachelor of Advanced Science (Honours) program at the University of Queensland. The learning objectives of the course include objectives related to critical thinking, understanding science within a societal context, and communication competencies. Course feedback in 2019 suggested that SCIE1100 did not provide sufficient challenge for some students, and it did not provide enough explicit instruction in communication competencies.

AIMS

This research aims to evaluate the effectiveness of a course redesign undertaken in 2020.

DESCRIPTION OF INTERVENTION

For Semester 1, 2020, the author redesigned SCIE1100 in order to better develop communication competencies. The redesign combined several well-known pedagogical principles: constructive alignment, formative assessment, authentic assessment and criteria-referenced assessment. A key component of the redesign was a sequence of ten formative authentic assessment tasks.

DESIGN AND METHODS

The course redesign was evaluated using mixed methods. Aggregated student grades in the ten tasks were analyzed for trends indicative of effective formative assessment; the performance of the 2020 cohort (N = 93) on a summative communication assessment was compared to the performance of the 2019 cohort (N = 127) on the same task, graded by the same graders using the same marking criteria; mid-way through the semester, a student-led team conducted surveys (N = 37) and focus groups to evaluate students' attitudes and experiences in the course; in the second last week of the semester, students completed the UQ Employability Framework Activity, and qualitative responses provided in this activity were examined for evidence of student self-efficacy and engagement.

RESULTS

Quantitatively, we observe a small positive effect in skill development; qualitatively, some students reported an improvement in self-efficacy and engagement, and some students reported spending more time on the tasks than the design intended.

CONCLUSIONS

The redesign succeeded in better delivering the learning outcomes related to communication competencies, possibly at the expense of over-working some students.

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