Anonymity in Survey Courses as Tool for More Diverse Engagement

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THE PROBLEM

It is not uncommon that students in introductory survey courses are reluctant to participate in verbal inquiry.

Results from surveys in an introductory geoscience course over four semesters show:

1. About 45% of male students professed comfort in asking verbal questions in a large lecture hall but less than 25% of females, and
2. Only 15% of students for whom English is not their first language professed comfort in asking verbal questions in a large lecture hall

Hence, large courses may be inadvertently dissuading the participation of many of the students we wish to encourage to participate in our discipline.

METHODS

Student digital participation was measured in a geosciences survey course over six semesters (Table 1).

Students' digital participation was obtained from the *Echo360 Active Learning Platform* (Figure 1) which included measures of behaviors (Table 2).

Data were merged into an anonymized learning analytics database (Figure 2) using students' university email address. Each student/course combination was assigned an anonymized and unique study ID and all student identification was removed and stored in a separate and secure Identity Database unavailable to the study team.

Table 1. This research is based on data from six semesters of CLIMATE 102 at the University of Michigan.

TERM	# STUDENTS	INSTRUCTOR
2014 Fall	183	Instructor 1
2015 Winter	184	Instructor 1
2015 Fall	230	Instructor 2
2016 Winter	191	Instructor 3
2016 Fall	208	Instructor 1
2017 Winter	188	Instructor 1

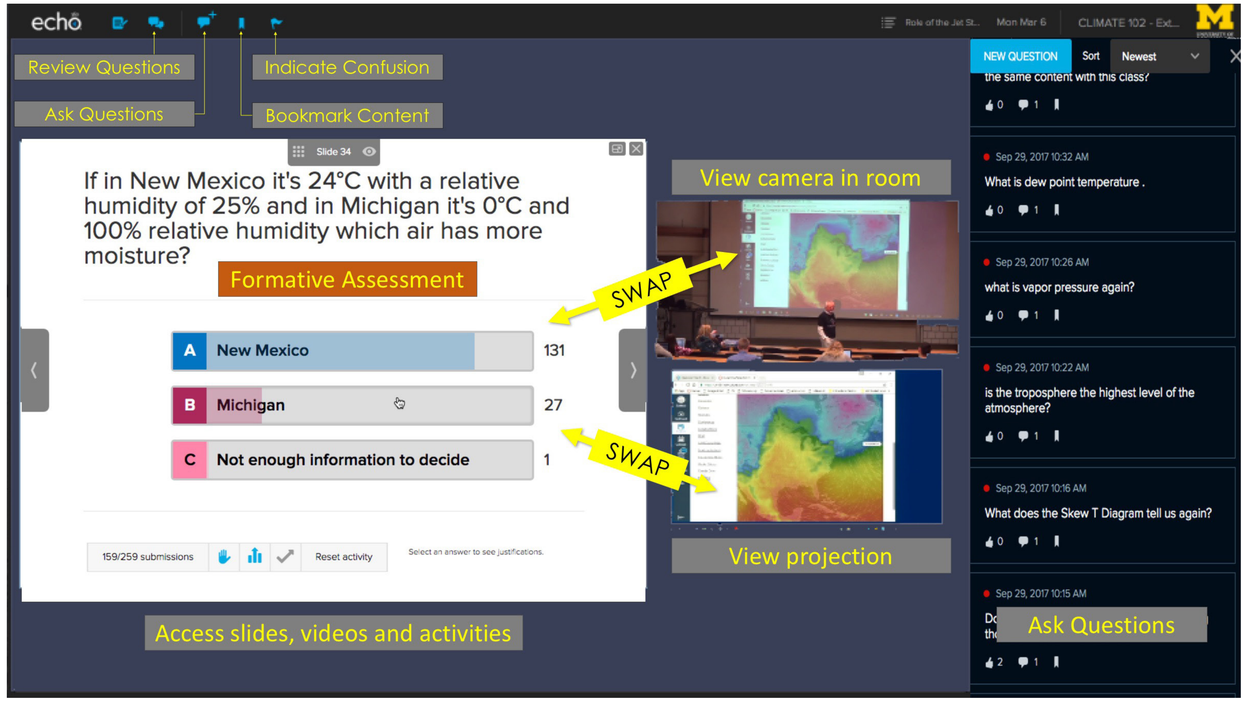


Figure 1. Student view of the Echo360 *Active Learning Platform* in which they can take notes, answer instructor questions, ask questions, bookmark slides and indicate confusion. All actions by the student are linked to the captured lecture.

Table 2. Data from Echo360 Active Learning Platform system.

Behaviors	Definition
% Activity Correct	Percent of correct answers on gradable formative assessment activities per class session.
%Activity Participation	Percent of formative assessment activities in which student participated per class session.
#Attendance	Measure of whether a student entered the classroom interface during class time.
#Notes Count	Number of words of notes typed per class session.
#Notes Interactions	Number of times user interacted/edited notes per class session.
#QnA	Each time a student created a question or responded to another students' question per class session.
#Confused	Number of time a student indicated they were confused per class session.
#Slide Views	Number of slides viewed per class session.
#Video TimeView	Measure of time student viewed a scene of a class capture video per class session.

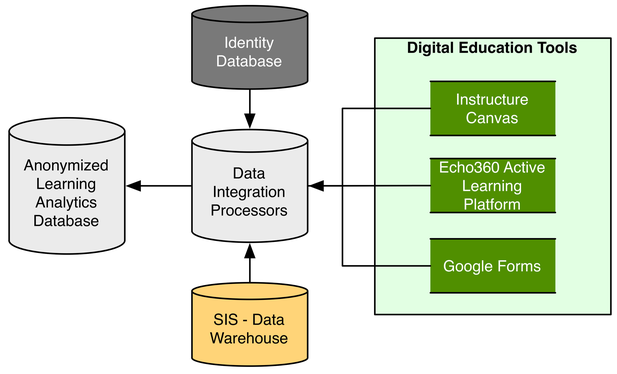
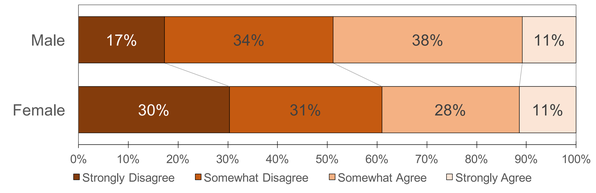


Figure 2. Data integration process.

PARTICIPATION DISCOMFORT



THE VALUE OF ANONYMITY

1. INCREASE IN PARTICIPATION

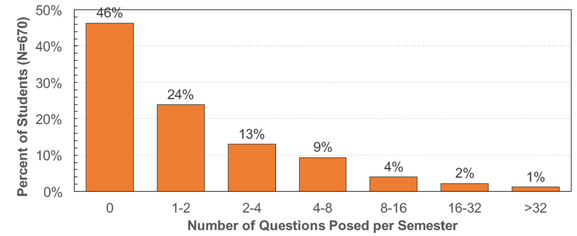


Table 3. Number of digital questions posed per term, number of students posing questions and ratio of number of students posing questions to total number of students in course.

TERM	NUMBER OF QUESTIONS	PARTICIPATING STUDENTS	RATIO
Fall 2014	114	39	21%
Winter 2015	115	40	22%
Fall 2015	777	103	45%
Winter 2016	623	96	50%
Fall 2016	679	113	54%
Winter 2015	699	151	80%

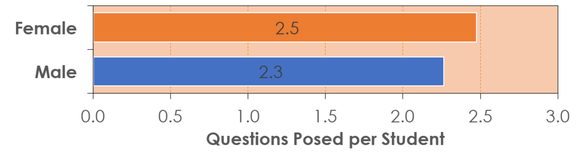
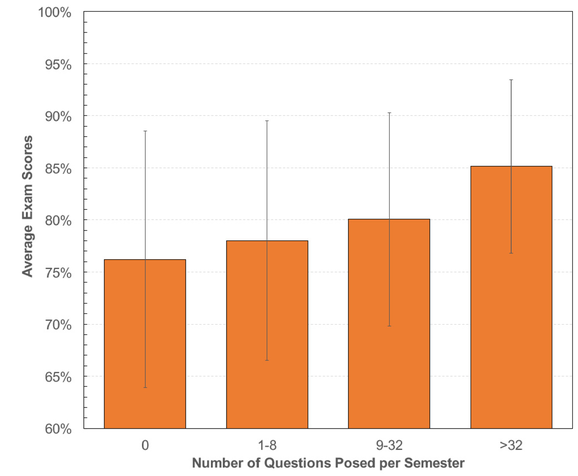


Figure 3. Questions posed per student as a function of gender.

2. QUESTION PARTICIPATION & GRADES