Student Outcomes in Online Courses: Does Class Size Matter?

While the research on class sizes in online environments is ongoing, our research suggests that Oregon State University Ecampus students performed better in courses with 30 students or fewer, with effects being significant for students in STEM and upper division courses.

Theory: How “Smaller” Courses Benefit Online Learning

- **Pedagogy and Course Design** *
  - Fewer students allow instructors to use more constructivist pedagogies.
  - Smaller courses are ideal for teaching learning objectives higher on Bloom's Taxonomy (e.g. 40 or fewer students for “application”).
  - It is easier for instructors to facilitate teaching presence (e.g. focusing course discussions and setting curriculum), cognitive presence (e.g. exchanging information and ideas) and social presence (e.g. portraying the self as real in a technology mediated environment) in courses with 30 or fewer students.

- **Instructor Performance** **
  - Online courses larger than 30 students can make instructor responsibilities such as grading more time consuming.
  - Online instructors have reported limited student-instructor interaction in larger courses compared to courses with 25-30 students.

Oregon State University Ecampus Study

This study utilized archival data collected through Oregon State University Ecampus courses taught during the 2017 and 2018 school years. We analyzed data from 391 undergraduate courses to compare average student grades and DFW rates in online courses of different sizes. Analyses also compared results based on course content type (STEM vs. non-STEM) and lower (100-200 level) and upper (300-400 level) division courses.

Results

In general, we found few differences in DFW rates based on class size, and few differences in student grades when comparing courses with 8-15 students to 16+ students, 8-40 students to 41+ students, and 8-50 to 51+ students. However, the following significant differences were found:

- While there were no differences in student grades for non-STEM courses based on class size, students in STEM courses earned higher grades on average in courses of 8-30 students (average GPA = 3.27) compared to 31+ students (average GPA = 3.09).
- While there were no differences in student grades for lower division courses based on class size, students in upper division courses earned higher grades on average in courses of 8-30 students (average GPA = 3.22) compared to 31+ students (average GPA = 3.10). This effect was significant for upper division STEM courses as well.

Implications and Discussion

- Certain aspects of “smaller” online courses (i.e. courses with 30 students or fewer) may help some students achieve higher grades in STEM and upper division courses. In other types of courses, such as in introductory and liberal arts courses, students may achieve similar outcomes on average in small and large classes.
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- Class size may impact student performance differently on an individual level than it does on average (e.g. small classes may help certain students more than others). Factors other than student success, such as instructor burn-out, may be relevant to decisions about class size. We recommend that readers take these results and use them in combination with other data to make informed decisions about online class size.

References

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Presenter & Lead Author: Rebecca Arlene Thomas, Ph.D.
Rebecca.thomas@oregonstate.edu

Coauthor: Mary Ellen Dello Stritto, Ph.D.
Maryellen.dellostritto@oregonstate.edu

- For the full manuscript, see the first edition of the Northwest eLearning Journal.
- To learn more about the Oregon State University Ecampus Research Unit, visit https://ecampus.oregonstate.edu/research.

*See Garrison et al. (1999) for Community of Inquiry framework definitions, and Taft et al. (2019) for specific articles that have discussed pedagogy and course design theories.
**See Lowenthal et al. (2019) and Russell and Curtis (2013) for research on instructor time spent grading, as well as student-instructor interaction by online class size.