Preprint: "Does class size matter? An exploration into faculty perceptions of teaching high-enrollment online courses" to appear in the *American Journal of Distance Education*

Lowenthal, P. R., Nyland, R., Jung, E., Dunlap, J. C., & Kepka, J. (in press). Does class size matter? An exploration into faculty perceptions of teaching high-enrollment online courses. *American Journal of Distance Education, 33*(3).

Does class size matter?

An exploration into faculty perceptions of teaching high-enrollment online courses

Patrick R. Lowenthal*
http://orcid.org/0000-0002-9318-1909

Rob Nyland

Eulho Jung

Boise State University

Joanna C. Dunlap

University of Colorado Denver

Jennifer Kepka

Boise State University & Linn-Benton Community College

*Corresponding author

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Abstract

Class size has been a popular topic for decades. There is renewed interest in this topic now with the growth of online learning. Online courses can accommodate hundreds, if not thousands, of students in a single course. Very little research, though, has been conducted recently on class size in online courses and the research that has been conducted is mixed. As the demand for online courses increases, so likely will class size. In this exploratory study, we investigated the perceptions and experiences of 37 faculty teaching high-enrollment online courses. In the following article, we report the results of our inquiry, implications for practice, and areas for additional research.

Keywords: Class Size; High-Enrollment Online Courses; Large Online Courses; Online Teaching; Course Design; Community; Interaction; Assessment; Workload

Introduction

At the start of the 2017-18 academic year, the institution introduced a new incentive-based budget model that recognizes activities associated with strategic priorities — namely student and financial success. The new model was designed to allow Schools and Colleges to outperform their budgets and retain any additional generated funds to support new endeavors. It was an exciting new opportunity, and administration, staff, and faculty began the challenging job of implementing the new budget approach and making plans for taking advantage of the incentive. One of the tasks involved looking at class size, and determining if there were some courses within each program area that could be effectively delivered as high-enrollment courses. At the start, the group quickly realized that they did not share an uniform benchmark for "large" and did not have criteria for determining what "large" should mean for different types of courses and different groups of students: undergraduate on-campus core, undergraduate on-campus major, undergraduate blended core, undergraduate blended major, undergraduate online core, and undergraduate online major; graduate on-campus, graduate blended, and graduate online. In addition, the group concluded there were other influencing factors such as: discipline/subject matter, foundational vs. applied, existing support structures for larger courses (e.g., learning assistants in science courses), the tenure and promotion status of the faculty member teaching the course, and so on. It was an eye-opening experience to be exposed to the variety of perspectives on what "large" means when discussing course size in general, and

> *online course size in particular. The bottom line for all of those involved in the conversation was that student success was the number one priority and, therefore, any established benchmarks had to put student success before financial success. Even after all of the work on this issue, the group was — and continues to be — critical about the effectiveness of large courses with regard to student success.*

The experience described above is not unique. Class size has concerned educators for years (Akerhielm, 1995; Schanzenbach, 2014; Toth & Montagna, 2002) because they believe it influences student learning and engagement: as class size increases, students' interactions with teachers decrease, and therefore students' learning decreases (Hewitt & Brett, 2007; Orellana, 2006). As the situation above illustrates, a large class may be defined as "any class where the numbers of students pose both perceived and real challenges in the delivery of quality and equal learning opportunities to all students" (Maringe & Sing, 2014, p. 763).

But why are we so concerned with class size? Research suggests that large class sizes lead to higher dropout rates, lower attendance, more cheating, reduced breadth and depth of subject matter, less instructor-student interaction, less instructor feedback, increased reliance on lecture, less student involvement in class, and the like (Russell & Curtis, 2013; Saiz, 2014). While administrators (i.e., those tasked with running schools and programs) care about student learning, they are also concerned with fiscal responsibility and see increasing the number of students in a class as one way to save schools and programs money (Mitchell & Leachman, 2015; Tomei, 2006). In the situation above, for example, increasing class sizes could lead to outperforming the budget and additional funds funneled to the primary unit. In addition, high-enrollment courses may increase access and availability for students (Chen, Anderson, Hannah, Bauer, & Provant-Robishaw, 2015; Chen, Lowenthal, & Bauer, 2016; Grenzky & Maitland, 2001).

Although the concerns of class size have primarily been focused on on-campus courses,

there is new attention on class size with the advent of high-enrollment online courses, some with hundreds and even thousands of students in a single course (Braga, Gunter, & Carneiro, 2015; Deming, Goldin, Katz, Yuchtman, 2015; Jordan, 2014; Rath, Gunter, & Graga, 2010; Trammell & LaForge, 2017). However, there is surprisingly little research on the effect of class size in online courses (Irby & Lara-Alecio, 2012) and most of what has been done is over 10 years old (c.f. Jiang & Ting, 2000; Rovai, 2000). Further, the results of published studies are mixed (Russell & Curtis, 2013). For instance, Cavanaugh (2005) found that adding a single student to an online course increased instruction time dramatically in order to maintain similar course quality. On the other hand, Bettinger, Doss, Loeb, Rogers, and Taylor (2017) found that class size did not impact course quality in terms of student grades, retention, or persistence in large online courses. Research also suggests it is hard to achieve positive student outcomes while also maintaining a reasonable faculty workload and satisfaction in high-enrollment online courses (Taft, Perkowski, & Martin, 2011). Given the results of existing research, however, it is clear there is room for additional inquiry.

While the role of class size on the aforementioned variables (e.g., students' grades, retention, and persistence; faculty workload and quality control) is important, we continued to reflect on our group's conversations and attempts at defining "large" benchmarks. In order to help our group and all other groups reviewing questions of online course capacity, we decided to launch our line of inquiry by investigating faculty perceptions of teaching what they defined for their context as "large" online courses. Our goal was (a) to see if their experiences could serve as a foundation for defining "large" when setting benchmarks for online course capacity, and (b) to share online educators' recommendations for teaching large online courses with colleagues who are struggling with the idea of teaching their own large online courses.

Below, we report the results of an exploratory study on faculty perceptions of teaching large online courses, which we refer to as high-enrollment online courses throughout the rest of this paper. We conclude with implications for practice and directions for future research. This study was framed around the idea that high quality online courses, and in turn student outcomes, begin and end with the faculty involved with designing and teaching online courses (Dunlap, 2005; Ludwig-Hardman & Dunlap, 2003; Wilson, Ludwig-Hardman, Thornam, & Dunlap, 2004). Online faculty shape what happens in online courses (Jaggers & Xu, 2016). Therefore, understanding the perceptions of faculty who teach high-enrollment online courses is one early step in identifying effective course design and delivery strategies for maximizing student achievement and faculty satisfaction in high-enrollment online courses.

Literature Review

In 2002, Stanley and Porter (2002) predicted that institutions would inevitably end up using high-enrollment courses to cope with expanding enrollments and reductions in funding. Since that time, enrollments in online courses and programs have increased while enrollments in face-to-face courses have decreased (National Center for Education Statistics, 2017; National Student Clearinghouse Research Center, 2017), and overall state funding in the U.S. is only now starting to recover after years of decreases (Mitchell, Leachman, & Masterson, 2017). During the past few years, in particular, high-enrollment online courses have been used to address the growing demand for online courses (Chen, Anderson, Hannah, Bauer, & Provant-Robishaw, 2015; Chen, Lowenthal, & Bauer, 2016). As a result, researchers have begun researching high-enrollment online courses. For this study, we did not include MOOCs because they tend to function outside of conventional degree-focused and credit-bearing policies, procedures,

timeframes, and financial structures. We summarize some of the recent literature below to provide background for our study.

Student Outcomes

While many studies have shown no significant difference between student outcomes in a face-to-face and an online course (Holmes & Reid, 2017; Johnson, Aragon, & Shaik, 2000), there is surprisingly little research conducted on student outcomes in large online courses. In one study, Parsons-Pollard, Lacks, and Grant (2008) compared student outcomes in a high-enrollment online and regular-enrollment face-to-face criminal justice course. The researchers found no significant differences except for grades on the third exam and the final grade of the courses. The students in the high-enrollment online course received significantly higher grades on the third exam in comparison to students in the face-to-face course. However, overall, the students' final grades and online course delivery were negatively correlated, meaning that students in the high-enrollment online course received significantly lower final grades than students in the face-to-face course (Parsons-Pollard et. al, 2008). Parsons-Pollard et al. also reported that students enrolled in the high-enrollment course were less satisfied than the students enrolled in the face-to-face course.

Other studies have also looked at the behaviors and characteristics of successful students in online courses. Morris, Finnegan, and Wu (2005) found that online course performance could be positively predicted by a number of student course activity indicators across 13 sections of a general education course. Other attributes of successful online students identified include self-motivation, time management, and capacity to learn with limited support (Beaudoin, Kurtz, & Eden, 2009). Berenson, Boyles, and Weaver (2008) also identified emotional intelligence as a predictor of student success in an online course.

Faculty Performance

There have been a few studies examining the effect of course size on faculty performance. In one study, Sorensen (2015) investigated how class size can influence instructor performance. Sorensen analyzed data from peer reviews of teaching at a for-profit college. The peer reviews were conducted using a performance rubric that evaluated faculty performance in terms of: (1) fostering critical thinking, (2) providing instructive feedback, (3) establishing high expectations, (4) establishing relationships, and (5) demonstrating expertise. A MANOVA was used to investigate the differences between class size and instructor performance (based on the peer review). Sorensen found that online class size potentially has the most effect on instructors' abilities to use their expertise and experience and to provide useful feedback for students. However, Sorensen did not find a correlation between any of the five variables and class size, while there was a significant correlation between the variables themselves. Sorensen concluded this may mean that factors other than class size have a larger influence on the quality of instruction.

Russell and Curtis (2013) also studied instructor expertise and interaction. Their study compared the experiences of instructors and students in two online Spanish language courses. There were 125 students enrolled in a high-enrollment online course and 25 students in a regular-enrollment online course; both courses used the same curriculum. Russell and Curtis found limited student-student and student-instructor interaction, both in terms of quantity and quality, in the high-enrollment online course. Furthermore, they reported that the instructor in the high-enrollment course was not able to fully utilize her expertise, which in turn resulted in a non-conducive learning environment. Instructor perceptions between the courses also varied. The instructor of the high-enrollment course reported that the workload of teaching the high-

enrollment online course prohibited interaction in the course; however, the instructor also reported that teaching online courses of any size requires more work than teaching a face-to-face course. The instructor of the regular-enrollment online course, however, reported that teaching an online version of a face-to-face section felt like less work (Russell & Curtis, 2013).

Other researchers have found that the size of online courses had no effect or slightly different effects on student perceptions. For example, Drago and Peltier (2004) compared student perceptions of 31 online courses and 27 face-to-face courses in a Master's of Business Administration program. They found that course size had no effect on student perceptions of faculty effectiveness. They also found that students reported no difference between small- and high-enrollment online courses in terms of the effectiveness of course materials or the amount of student-student and student-instructor interaction. In fact, they found a positive relationship between class size and faculty mentoring and attention to course structure; in other words, students reported that larger courses were better structured and the faculty teaching these larger courses provided better guidance compared to those teaching smaller courses (Drago & Peltier, 2004).

Instructional Design

Other research has focused on improving the design of high-enrollment online courses. Nagel and Kotzé (2010) investigated student perceptions of teaching presence, social presence, and cognitive presence in a high-enrollment online course in which the instructor implemented strategies to improve immediacy and sense of community (e.g., a two-round peer review activity; text messaging). On a five-point scale, students rated teaching presence the highest (4.3), followed by cognitive presence (4.0) and social presence (3.52). Based on these results and the students' high success rate, the researchers concluded that the "innovative use of ICT

[information and communication technologies] enabled the lecturer to provide better quality online teaching despite the large size of the class" (p. 50).

In another study, Chen et al. (2015) describe their experience collaboratively designing three high-enrollment online courses. They report on their lessons learned which include things such as setting up communication guidelines; using interactive learning activities; and providing roadmaps, study guides, and test-taking tips to students. Similar strategies were also reported by Elison-Bowers, Sand, Barlow, and Wing (2011).

Overall the research on high-enrollment online courses is mixed. While some studies have found that student and faculty satisfaction are lower in high-enrollment online courses than regular-enrollment online courses, other studies have reported ways to improve the design of high-enrollment online courses to lessen or eliminate any negative effects of course size. Very little research, though, has investigated faculty perceptions of teaching high-enrollment online courses across multiple disciplines. This study addresses this gap in the literature.

Method

This exploratory study investigated the perceptions and experiences of faculty teaching high-enrollment online courses. The following research questions guided our inquiry:

RQ1: What are faculty's general perceptions of high-enrollment online courses?
RQ2: Are faculty satisfied with teaching high-enrollment online courses?
RQ3: How do faculty teach high-enrollment online courses?

Sample

We identified faculty who had taught online courses with 30 or more students during the last five years at a metropolitan research university located in the Pacific Northwest. Because there is not an agreed upon definition of a high-enrollment online course (cf. Russell & Curtis,

2013; Sorensen, 2015), we surveyed faculty who had taught online courses with 30 or more students because some programs at this university cap their online courses at 23 students. While a class of 30 students might not seem large in some disciplines, for other disciplines a class of 30 students represents approximately 25% more students than a typical course. We administered the online survey to 148 faculty; 37 faculty ended up completing the survey, which was a 25% response rate.

Data Collection

We created an online survey to answer the research questions. The survey included both Likert-type questions and open response questions that aligned with each research question, such as:

- What types of courses (e.g., certain disciplines, general ed. vs. major, undergraduate vs. graduate) work well as large online courses?
- Please identity some benefits of large online courses.
- How do you manage your workload in a large online course?

See the Appendix for the complete survey.

Over half of the respondents were adjuncts or lecturers in non-tenured or non-tenure track positions (see Table 1). Faculty teaching experience varied from less than two years (27%) to more than 10 years (32%) with a mean of 5.9 years of experience (see Table 2). Class size experience ranged from those who had taught smaller high-enrollment courses of 30-49 students (43%) to others with experience teaching online courses with over 150 students (8%).

Data Analysis

Once the survey was closed, the survey data was downloaded; quantitative data was imported into SPSS to calculate descriptive and inferential statistics. The qualitative data was downloaded and independently coded using an open coding technique by two researchers; differences were discussed and resolved by consensus. Once all of the responses were coded,

frequencies and descriptive statistics of the codes were calculated. Open comments could have more than one code applied to them, thus, the descriptive statistics represent the number and percentage of total responses that had a given code.

Table 1
Rank and Tenure Status

Rank	Tenure Status
Adjunct Instructors: 12 (32%) Lecturers: 11 (30%) Assistant Professors: 1 (3%) Associate Professors: 8 (22%) Professor: 3 (8%) Other: 2 (3%)	Non-tenured / non-tenure track: 19 (51%) Tenure-track: 3 (8%) Tenured: 9 (24%)

Table 2
Online Teaching Experience

Online Teaching Experience	Largest Online Course Taught
1-2 years: 10 (27%) 3-5 years: 8 (22%) 6-9 years: 7 (19%) 10+ years: 12 (32%)	30-49: 16 (43%) 50-74: 8 (21%) 75-99: 5 (14%) 100-149: 5 (14%) 150 and above: 3 (8%)
Mean: 5.9 years Standard Deviation: 3.47	Mean: 75.5 students Standard Deviation: 50.9

Results

We report the results of our inquiry separated by each research question.

RQ1: What Are Faculty's General Perceptions of High-Enrollment Online Courses?

A primary purpose of this study was to explore faculty perceptions of high-enrollment online courses. For instance, we wanted to understand how faculty think about class size, which courses should be offered as high-enrollment online courses, and the benefits and challenges of high-enrollment online courses.

Size of high-enrollment online courses. Class sizes vary across universities, disciplines, course type, and level. While we began by asking participants, "What is the largest online course you have taught?" (reported above; see Table 2), we wanted to understand what faculty consider a large online course. While 40.5% of respondents (n=15) reported that a course with 30 or more students was a high-enrollment course, 10.8% of respondents (n=7) reported that courses need to have 100 or more students to be considered high-enrollment (see Table 3).

Table 3
Enrollments Needed to be Considered a High-Enrollment Online Course

Category	Response
30 or more students	15 (40.5%)
40 or more students	6 (16.2%)
50 or more students	7 (18.9%)
60 or more students	4 (10.8%)
70 or more students	1 (2.7%)
100 or more students	4 (10.8%)

When asked for an ideal size for an online course, responses ranged from 10-15 students to 51 or more students. After collapsing categories from the survey (see Table 4), the three most frequently selected responses were 21-30 students (39.5%), 31-40 students (23.7%), and "There is no ideal class size" (15.8%).

Table 4
Ideal Class Size

Ideal Size	Response
There is no ideal class size	6 (15.8%)
10-20 students	4 (10.5%)
21-30 students	15 (39.5%)
31-40 students	9 (23.7%)

41-55 students	1 (2.6%)
51 or more students	3 (7.9%)

Types of high-enrollment online courses. We were also interested in whether faculty thought some courses work better as high-enrollment online courses than others, as well as whether some courses should never be offered as high-enrollment online courses. The most frequently type of course cited (47% , n = 19) that works well, according to faculty, were undergraduate general education or introductory courses (e.g., 100 level courses). A few participants specifically stated that undergraduate courses that do not require grading many written assignments would work best, as captured in these responses:

- "Undergraduate likely and courses that don't require intensive instructor review and feedback (such as with written assignments)"
- "I would say gen ed where the majority of grading can be done in Blackboard [the University's LMS], rather than writing-intensive courses"

However, 9.3% (n=4) suggested that any type of course could be taught as a high-enrollment online course. For instance, one stated: "I think any course can be taught effectively online if it is well designed." At the same time, 5.4% (n=2) suggested that no courses could be taught effectively as high-enrollment online courses. One stated, "I cannot speak for what courses would do well as large online courses as I do not see large online courses as advantageous to the student." Finally, 9.3% (n=4) of the participants reported that they were not sure which types of courses work best as high-enrollment online courses.

Courses requiring hands-on or lab activities were most frequently mentioned as a type of course that would not work well in a high-enrollment online setting (16%, n = 8). One participant stated, "I would think any kind of course that requires a lot of hands on learning or applications- like math, chemistry or physics." The next most commonly mentioned types of

courses were writing-intensive courses (18%, n = 6) and courses requiring frequent or intense interaction from the instructor (12%, n = 4). Faculty also reported that upper division (12%, n = 4) and graduate level (9%, n = 3) courses should not be offered as high-enrollment online courses.

Benefits and challenges of high-enrollment online courses. We then asked participants to identify the benefits and challenges of high-enrollment online courses. When asked to "identify some benefits of large online courses," the most common responses were student access (29%, n=11). High-enrollment online courses were seen as a way to increase opportunities for students to take the classes they need in order to graduate in a timely manner. One participant stated:

> Well, from the perspective of accommodating lots of students['] schedules, large asynchronous online classes are great. If you have a face-to-face class of 70-100 that meets a[t] specific times each week, that means 70-100 students have to shuffle their schedu[l]es to make those times work.

The next most frequently cited benefit was coded as "efficient course management" (26%, n = 10). In this category, the focus was on getting as many students through a course "pipeline" while placing minimal burden, in terms of workload, on the faculty member. Some representative comments in this vein are:

- "I only have to 'manage' one class (design, facilitate, etc,)"
- "....lower workload for instructor (if the course has already been designed)"
- "[Large online courses] can be efficient ways to help lots of students 'cover' material"

Next was "administrative benefits" (21%, n = 8). These were perceived benefits for the institution, not necessarily benefits for faculty or students. Most of these comments focused on making the institution more money based on the lower overhead that comes with high-enrollment online courses. The following comments capture these responses:

- "The University would be able to process a significant number of students through the learning mill while minimizing the cost of providing that particular service."
- "This is a question for the admin. Because large classes mean savings for the university, fewer faculty, and more of an industrialized education model."

Only 11% (n = 4) of faculty mentioned the pedagogical benefits of high-enrollment online courses, while another 11% (n = 4) of faculty stated that they thought there were "no benefits" associated with these types of online courses.

Faculty identified interaction (46%, n = 23), grading (28%, n = 14), and lack of time (12%, n = 6) as the leading challenges with high-enrollment online courses. Interaction was particularly highlighted by respondents, both in terms of feedback and as part of the need for faculty to provide students information about procedural or course logistics. "Grading and giving the needed personal attention to students" was reported as the largest challenge by one respondent. Some participants also expressed concerns about student isolation or distance when describing challenges of high-enrollment online courses, as represented in these three comments:

- "some students seem to get 'lost' in the shuffle."
- "[it] can be hard to tell 'where students got off track' when you don't have a conversation with them."
- "students can feel lost and alone at times"

Others reported that specific modalities of work and communication posed particular challenges in large classes. For instance, one participant stated how "even emails with simple questions that take 2 minutes to address add up with 100 students! And grading written work can pile up." Another reported a similar issue, stating that the biggest challenge was "a lot of grading (discussion boards and papers) as well as procedural questions from students."

Respondents cited several strategies for addressing these challenges including: setting clear expectations (13%, n = 7), using teaching assistants (13%, n = 7), being proactive with their communication (13%, n = 7), placing students into groups (11%, n = 6), and using assessment

techniques that required less individual feedback such as objectively scored assessments (e.g., tests and quizzes) and assignments with rubrics (11%, n = 6). Some of these strategies are mentioned again in the following section on workload.

Workload of high-enrollment online courses. Participants were asked questions about the workload associated with teaching high-enrollment online courses.The majority of participants agreed (61%, n=28), including 21 (46%) who strongly agreed, that teaching high-enrollment online courses requires more time than teaching regular-sized online courses (see Table 5).

Table 5
Workload Results

Large Online Courses Require More time	**Response**
Strongly Disagree	2 (5.4%)
Somewhat Disagree	2 (5.4%)
Neither Agree nor Disagree	5 (13.5%)
Somewhat agree	7 (18.9%)
Strongly Agree	21 (56.8%)

To manage this workload, 46% (n = 17) of the respondents mentioned the need to be proactive and efficient with their time including setting aside time every day to keep up with the workload of the course. One faculty commented, “I have assessments for them weekly, so it's important that I manage my time well and stay current with grading them. I also respond to student inquiries promptly to ensure they have any questions or concerns addressed right away.” Participants also mentioned the need to be efficient with the grading process (22%, n = 8); this includes the use of objectively scored assessments and rubrics for written assignments. One participant stated:

Much of what I have done to better manage my time is to streamline the review and

> grading process, refining the rubrics for improved clarity and application, adding more "automatic grading" assignments such as quizzes and self[-]assessments, and summarizing comments applicable to the entire class, rather th[a]n individually, and encouraging students to contact me directly for more specific feedback on their individual work.

Additional strategies included the use of Teaching Assistants (14%, n = 5) and "sacrificial hard work" (14%, n = 5). Some participants simply felt that teaching a high-enrollment online course required personal sacrifice as captured in the following quotes:

- "I give up many aspects of my personal life"
- "I'm so bad at managing my workload. One day at a time?"

In giving advice to a colleague preparing to teaching a large online class, participants recommended faculty prepare in advance (37%, n = 17). Specific preparation strategies included seeking mentoring from experienced instructors, getting familiar with the technology and learning management system, and allocating sufficient time. One participant shared, "Map out the entire semester in advance so you know exactly what each week is going to look like and you can then parse out work each week in advance." Another said:

> Become very familiar with the technology. And send announcements to the class as a whole without resorting to responding to individual emails. Most of the time emails and questions asked deal with the class as a whole. Do not respond to every student's thread or post. It is hard not to respond but you only have so much time. Respond to threads and post by responding in an announcement to the whole class. In most cases, the emails from student[s] have the same discussion board/group discussion questions.

Participants also recommended utilizing assistants and other institutional support to manage large online courses (15%, n = 7). Seven responses indicated effective time management (15%, n = 7) is essential while another seven participants mentioned that proactive communication is important (9%, n = 4).

RQ2: Are Faculty Satisfied with Teaching High-Enrollment Online Courses?

To investigate faculty satisfaction, the participants were asked the extent to which they

agree with a series of statements (with 1 = Strongly Disagree and 5 = Strongly Agree). Participants reported that they like teaching regular-size online courses more than high-enrollment online courses. We ran a paired-samples t-test to investigate this difference. After checking assumptions for the test, we determined that a non-parametric test was needed. By running the Wilcoxon Signed-Rank test, we determined that faculty's affinity for teaching "regular-sized" online courses was significantly higher than teaching high-enrollment online courses ($Z = -3.60$, $p < .001$).

We then asked participants how satisfied they were with their students' learning experience in high-enrollment online courses. The mean rating was 3.38 on a 5-point scale, which is above the 2.50 midpoint; thus, participants were a little more satisfied than dissatisfied with the quality of students learning experience in their high-enrollment online courses (the overall results for this section are displayed in Table 6).

Table 6
Attitudes About Online and High-Enrollment Teaching

Statement	Mean Rating	St. Deviation
I like teaching "regular" sized online courses	4.09	.882
I like teaching large enrollment online courses	2.84	1.32
I am satisfied with the learning experience students have in my large enrollment online courses	3.38	1.25

RQ3: How Do Faculty Teach High-Enrollment Courses?

Finally, we were interested in how faculty design and teach their high-enrollment online courses.

Features of well-designed and poorly-designed high-enrollment online courses. The most frequently cited feature of a well-designed high-enrollment online course was establishing

clear expectations for students via the design of the course (37%, n = 23). This includes having a consistent course structure, as well as guidelines for assignments and grading:

- "Modules that are organized, linear, and follow the same structure in each module"
- "Clear deadlines, realistic deadlines, communication is clear on all aspects of grading, well designed syllabus and updates in the beginning of the semester to let students know what is expected of them"

Participants thought having clear expectations in their course could eliminate unnecessary questions and communication later on in the semester. Participants also identified clear communication and feedback as components of well-designed high-enrollment online courses (26%, n = 16). Related to giving prompt feedback to students, one participant commented that a well-designed course included "[m]eaningful assignments that include constructive, timely feedback. You know, teaching." Other themes of a well-designed high-enrollment online course include small group learning (11%, n = 7), the use of media (10%, n = 6), and the building of a community of inquiry (10%, n = 6). In terms of community, participants reported the need to create a sense of community through student-instructor and student-student interaction:

- "It would be a class where the student does not feel like a "number" and has the opportunity to connect with fellow students via discussion boards and introduction materials."
- "The same features of design that are appropriate for a smaller online class.....student to teacher contact; student to content contact; and student to student contact. Form them into groups and create activities for them that allow/require them to work to[g]ether."

Unclear expectations and unclear directions were identified the most frequently as a feature of a poorly design large online course (38%, n = 17). Participants explained that a lack of directions or guidance for assignments and missing deadlines, as well as syllabi and schedules lacking important details and direction, were examples of unclear expectations. Another feature of poorly designed (or taught) high-enrollment online courses was a lack of communication

(18%, n = 8) and lack of feedback (13%, n = 6), as well as slow responses to email. The following quotes capture these themes:

- "Little or no opportunity for interaction between students and instructor"
- "Absence of feedback loops and monitoring. Excessive use of 'tell me what you think' interactions, which do not require student to support opinions with course concepts."

Some participants also reported that assigning too many assignments requiring heavy grading (9%, n = 4) is a feature of a poorly designed high-enrollment online course. One faculty member captured this idea by explaining that a poorly designed course would "rely heavily on discussion groups and assignments that are subjective and require extensive grading. You would spend your whole day grading if I ran my course like this."

Assessment strategies in high-enrollment online courses. Participants were also asked about how they assessed learning in a high-enrollment online course. While several assessment methods were identified, the most commonly cited methods were multiple-choice exams (28%, n = 22), written assignments (23%, n = 18), quizzes (19%, n=15), discussion boards (16%, n = 13), and group assignments (9%, n = 7). Overall, it appears that the method of assessment varied by the subject of the course. However, a few participants mentioned that for expediency they utilized more objectively scored assessments in high-enrollment classes:

- "I personally do not include writing assignments at all. It's just too unmanageable. So it's all automated grading through Blackboard - multiple choice tests."
- "In large classes, forced choice items are almost a necessity. I like to be able to provide feedback on correct and incorrect items (expanding on the rationale for why what is correct is so). But, again, that takes times and often prep work."

Discussion

High-enrollment courses are common at most large colleges and universities. Therefore, it is not surprising to find more institutions increasing the enrollments and thus the class size in

certain online courses. We set out to investigate faculty perceptions and experiences with teaching high-enrollment online courses. Our results suggest that faculty perspectives and experiences teaching large online courses vary to some degree. However, certain themes are clear: most faculty identify an ideal enrollment for an online course as lower than what they consider a high-enrollment course, meaning that there seems to be evidence that faculty do not consider teaching high-enrollment courses to be the ideal way to offer online courses. At the same time, some faculty clearly think that high-enrollment online courses are not necessarily a bad thing; they suggest that it all comes down to how a course is designed and taught. Others described high-enrollment online courses almost as a necessary evil because they can enable students a way to complete their degree in a timely manner.

Faculty in this study identified unique challenges with teaching high-enrollment online courses, particularly around finding the time to respond to students' questions and provide timely feedback. The perception of difficulty may stem at least in part from personal experience; a number of faculty mentioned a need for (or noted a lack of) time management skills when teaching a high-enrollment online course. These results are similar to the findings of Sorensen (2015).

Some faculty perceived high-enrollment online courses as a challenge even though they did not consider themselves teaching a high-enrollment course. For instance, some faculty might regularly teach courses with 50 or so students but not consider these courses as high enrollment even though many other faculty would. Thus, this supports the idea that not only does class size vary across discipline but so do faculty perceptions of what is a regular-sized vs. high-enrollment online course varies both within and across disciplines—likely based on what they are used to teaching.

Most research suggests that students experience less communication with instructors and peers in high-enrollment online courses than they do in regular-sized online courses (Chen, deNoyelles, Patton, & Zydney, 2017). This is likely because the size of a course often influences instructors' teaching and assessment practices. Faculty in this sample reported the need to make design and delivery changes, including limiting types of assessments or recruiting teaching assistants, in order to successfully teach high-enrollment online courses. Faculty also highlighted the importance of establishing clear expectations and course structure. These results support the findings of Trammell and LaForge (2017) and Nagel and Kotzé (2010). For instance, Trammell and LaForge (2017) found that a well-designed and well-structured online course can reduce student emails and thus serve as a classroom management technique for high-enrollment courses. Similarly, Nagel and Kotzé (2010) found that using communication templates can help instructors teach high-enrollment online courses, specifically in terms of increasing simulated presence. Strategies like these help faculty manage and balance the workload involved in teaching high-enrollment online courses; when assignments or course policies are unclear, workload may increase as students seek clarification or as they complete work that may need redirection or additional attention by the instructor. This may be why the faculty in this sample frequently emphasized the need for clear expectations, advanced planning, and consistent design in high-enrollment online courses.

While the majority of the faculty in this study reported that teaching high-enrollment online courses required more work and time than teaching other courses, some faculty specifically stated that teaching high-enrollment online courses required personal or professional/pedagogical sacrifice. Both of these findings are problematic in terms of workload and satisfaction if institutions are going to increasingly offer high-enrollment online courses.

One clear finding from this study is the need to intentionally and carefully design high-enrollment online courses in ways that help faculty manage the workload involved while still enabling students to have a successful learning experience.

Limitations and Implications

While more and more institutions are offering high-enrollment online courses, the overall number of high-enrollment online courses, as well as faculty who teach these courses, is relatively small at most institutions, which in turn limits the possible sample size for a study like this. Therefore, due to the small sample size in this study, the results should not be generalized or assumed to represent all faculty. Further, the results in this study are also limited due to differences in department culture; that is, what some faculty consider a high-enrollment course in one program, school, or college, is considered a low-enrollment course in another. Future research should use qualitative and/or mixed methods to better understand some of the nuances of faculty experiences teaching high-enrollment online courses as well as to investigate whether faculty who have engaged in significant advanced planning or course design experience more satisfaction from high-enrollment online courses than those who have not and to what extent this satisfaction is aligned to student success. Finally, additional research needs to be conducted at other institutions to better understand if the faculty experiences and perceptions of teaching high-enrollment online courses are similar across different institutions.

Conclusion

The results of our inquiry reveal that faculty in this sample believe online courses with smaller enrollments are better for student learning and faculty satisfaction. The results also suggest that advanced planning plays a critical role in effectively teaching high-enrollment

online courses. While the subject matter taught and the type of assessments used did influence to an extent whether faculty felt student success was possible, some faculty perceive high-enrollment online courses as antithetical to student success. However, given how the definition of a high-enrollment course varies across those who teach them, it is hard to define the enrollment tipping point in which faculty begin to experience difficulty. In general, faculty perceive design, delivery, communication, and assessment as the major challenges in implementing an effective high-enrollment online course. Results from this study can be used by administrators when making decisions about online course size and faculty workload. As a result of this study, we hope instructors can identify strategies to reduce workload and increase interactions in high-enrollment online courses.

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Appendix

Demographics These initial demographic questions are to help us understand your background.	
I am a (a) Professor, (b) Associate Professor, (c) Assistant Professor, (d) Instructor, (e) Adjunct	**Rank**
I am (a) Tenure-track, (b) Tenured, (c) non-tenured or non-tenure-track	**Tenure**
My (fall/spring) teaching load is: (a) 4/4, (b), 4/3, (c) 3/3, (d) 3/2, (e) 2/2, (f) other	**Load**
How many years have you been teaching online: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10+	**Experience**
What do you consider a large online course? (a) 30 or more students, (b) 40 or more students, (c) 50 or more students, (d) 60 or more students, (e) 70 or more students, (f) 100 or more students.	**Definition**
What type of training or professional development have you completed on designing or teaching online courses? (select all the apply) (a) eCampus Course Design and Development Seminar (eCD2S) (b) eCampus Course Design Phase (eCD) (c) eCampus Teaching Online Seminar (eTOS) (d) Quality Matters Peer Review (e) Other	**Training**
What type of supports and/or incentives (e.g., teaching assistants, faculty-development opportunities, course-development stipends) do you receive to design and teach large online course(s)?	**Support**

General Perceptions of Large Online Courses We are interested in learning more about what faculty think about large online courses and how they are similar or different than "regular" sized online courses.
● Based on your experience, what is the ideal class size for online courses? (a) There is no ideal class size; (b) less than 10 students; (c) 10-15 students; (d) 16-20 students; (e) 21-25 students; (f) 26-30 students; (g) 31-35 students; (h) 36-40 students; (i) 45-50 students; (j) 51 or more students ● What types of courses (e.g., certain disciplines, general ed. vs. major, undergraduate vs. graduate) work well as large online courses? ● What types of courses do not work well as large online courses? ● Please identify some benefits of large online courses ● Please identify some challenges of large online courses? ● How do you address those challenges in large online courses? ● Teaching large online courses requires more time than teaching "regular-sized" online courses? (strongly disagree --- strongly agree) ● How do you manage your workload in a large online course? ● What advice would you give a colleague who is going to be teaching a large online course for the first time?
Satisfaction with Teaching Large Online Courses As class sizes increase, we want to know how satisfied faculty are with teaching these large online courses.

- I like teaching "regular" sized online courses (strongly disagree --- strongly agree)
- I like teaching large enrollment online courses (strongly disagree --- strongly agree)
- I am satisfied with the learning experience students have in my large enrollment online courses (strongly disagree --- strongly agree)

Design and Teaching Strategies with Large Online Courses [21 Questions]

We want to learn more about how faculty design and teach large online courses.

One popular framework used to guide the design and facilitation of online courses is the Community of Inquiry Framework. This framework suggests that meaningful learning involves these three elements:

- Social presence (getting a sense that others are "there" and "real")
- Teaching Presence (design, facilitation, and direction of cognitive and social processes)
- Cognitive Presence (construct meaning through sustained communication)

But it is unclear how faculty do this in large online courses. We hope to learn how, if at all, each of these elements take place in large online courses.

- What are features of a well-designed large online course?
- What are features of a poorly-designed large online course?
- How do you assess student learning in large online courses?
- I think it is important in large online courses to: [strongly disagree -- strongly agree]
  --Develop social presence between students and the instructor
  --Develop social presence between students and other students
  --Develop teaching presence
  --Develop a sense of classroom community
  --Have student-to-student interaction
  --Have instructor-to-student interaction
  --Have student-to-content interaction

In my large online courses,

Teaching Presence

- I clearly communicate important course topics and course goals.
- I actively try to keep course participants engaged and participating in productive dialogue.
- I try to develop a sense of community among course participants.
- I focus class discussions on relevant issues aimed at student learning.
- I provide feedback in a timely fashion.

Social Presence

- I try to develop a sense of belonging in the course.
- Students regularly interact with the instructor and each other in the large online courses I teach.
- I am able to form distinct impressions of some course participants.
- I try to develop a safe learning environment where students feel comfortable disagreeing with each other
- I try to develop a sense of collaboration.

Cognitive Presence

- I develop course activities that will pique my students' curiosity and motivate them to explore the course content more deeply.
- I use online discussions to help students see different perspectives.
- I provide opportunities to help my students reflect on course content and discussions.
- I provide opportunities for students to test and apply what they learned.
- I help students understand how they can apply what they have learned in their other coursework and outside of the classroom.

Additional Comments

After submitting the survey, you will have a chance to enter your name and contact information (into a Google form) to be entered in a raffle to win one of two $40 gift cards to Amazon.com.