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ABSTRACT

A literature search and survey of 259 Ohio State University faculty addressed advantages and disadvantages of large enrollment classes as well as factors in deciding appropriate class size. Results of both efforts found that the advantages of large classes included lowering of instructor costs, efficient use of faculty time and faculty talent, availability of professional quality resources, and standardization. The disadvantages of large class size included impersonal relations between teacher and student, limited range of instructional activities, management problems, a problematic reward system, and a perception that those who taught large classes had a lower status within the institution. On the question of how to decide whether a class should be large or small, it was concluded that questions of course purpose, instructor teaching style, facilities and resources available, and the importance of a common experience for students all entered into the decision. Results of the survey and literature search also produced tips on teaching large classes that cover lecturing, discussion, writing, other learning activities, learning environments, communication style, testing, grading, and administration. (20 references) (JB)

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Very few faculty, administrators, or researchers in higher education are neutral on the issue of class size. On the one side are those who say that large class size severely constrains the achievement of important educational goals; others argue that large classes can be as instructionally effective as small classes and are an economic necessity at large universities.

Unfortunately, discussions of the effectiveness of large enrollment courses are often emotional and the findings in the published literature on the topic are mixed. In the interests of promoting continued scholarly dialogue and examination of the role of class size on instruction, this article will summarize some of the main issues that have emerged in the literature and in a survey completed by 259 university faculty who teach in large enrollment classes. The survey, sent to 746 members of the Ohio State faculty who taught courses with 100 or more students enrolled in winter 1988, sought information on the number and types of courses offered at Ohio State and on special pedagogical issues.

Definitional Issues

Frequently, large classes are defined operationally by researchers as those that contain 100 or more students. Faculty, however, more commonly offer definitions based on a personal sense of how large a class has to be before size significantly affects their teaching behaviors or student performance. Some faculty think of classes of more than 50 students as large while others draw the line at more than 300. Other faculty argue that purpose is inherently involved in defining large classes: 40 students may be said to constitute a large class when the focus is on writing or learning a foreign language but small when straightforward presentation of information is the goal. Whether the students are in smaller sections of a multisection course or in a large lecture section is another factor that influences the definition. Some think that multisection courses fall outside of the definition when all sections are taught in self-contained units of about 30 students. Others feel that the common syllabus, tests, and management issues that often unite such sections make it necessary to include these cases in discussions of large enrollment classes.

The main advantages and disadvantages of large classes generally cited in the literature and in arguments about class size include:

Advantages of Large Classes

Cost. Increasing the student-teacher ratio in a class lowers instructor costs. Although Kollaritsch and Krasniewski (n.d.) (two Ohio State University professors) observe that cost savings do not actually materialize when teaching associates and other auxiliary staff are employed in addition to the main instructor, generally it is assumed that instructor costs are lower when student enrollment is high.

Faculty time. When faculty teach a large class rather than several small classes, they free up time that they can use in other ways. Some would argue that increased time devoted to the management issues in-

creased time devoted to the management issues involved in large classes counterbalances savings in preparation and class contact hours, but generally it is assumed that the use of large classes allows faculty across a department to use their time more efficiently.

Faculty talent. Some argue that faculty who have a unique expertise or charisma can reach more students when they teach large classes. In addition, some faculty feel that they are particularly effective in a large class setting; they get a special energy from large audiences. Most faculty, however, are more comfortable and effective in smaller settings.

Resources. One rationale for large class instruction is that when instruction is planned on a grand scale, faculty can justify expenditures for professional quality audiovisuals, clerical assistance, special guest speakers, specially equipped facilities, or materials, since the course will reach large numbers of students. More time can go into planning the course, given the numbers of students that will enroll. Unfortunately, many faculty find that while these arguments make sense, the reality is often different; no special resources may be allocated to large classes, and facilities can often be inadequate.

Standardization. Particularly in areas of instruction like mathematics or foreign languages that rely on a sequential order and manner in which information or skills are obtained, standard coverage of material is a curricular concern. Departments may depend on large classes or multisection courses to provide some standardization of instruction so that students moving from one level of instruction to another will have similar experiences and competencies. In areas of the curriculum that do not rely on standardization, large courses are a disadvantage rather than an advantage.

Disadvantages of Large Classes

Impersonal nature. Faculty and students alike complain that there is little opportunity to get to know each other, to personalize instruction to take student differences into account, or to allow for interaction and feedback in large classes. Some students in a study by Wulff et al. (1987), however, stated that they feel less pressure to participate in or attend a large class and actually prefer them. It is also argued that creative ways for personalizing instruction in large classes, often but not always involving technology, are available for faculty who want to use them.

Limited range of instructional activities possible. Faculty in the literature and in the survey cite practical difficulties with trying to conduct discussions, respond to student writing, and stimulate critical thinking in large classes. They say that these factors limit the range of instructional objectives that can be set for such classes. While one solution is often to situate such activities in recitation groups, the instructor feels some loss of control, since these sections are ordinarily taught by teaching associates. Once again, others claim that there are creative ways to use a wide range of instructional activities even in large classes.

Management issues. Faculty may not receive clerical or teaching associate assistance to accomplish the administrative tasks connected with large classes, such as tracking enrollment and attendance and devising systems to prevent cheating during exams and returning papers in class. These tasks consume great amounts of time that could be used to enhance class preparation. Even if help is available, faculty must devote considerable time to supervising the teaching associate or clerical staff.

Reward system. Faculty who teach large classes often feel that they are not adequately rewarded, and may even be penalized, for the time they invest in teaching these classes well. Over time, they note that those who consistently teach large classes are viewed as low status members of the department, whose research effectiveness becomes suspect. In addition, some claim that departments sometimes offer no extra consideration in course load assignment based on class size.

Large Class, Small Class–How to Decide

Most research studies on the effects of class size on instructional effectiveness in higher education settings are based on comparisons of classes of different size when effectiveness is measured by final course grades, final exam scores, or student course evaluations. When simple end measures, such as a common exam, are employed for judging results, most studies conclude that class size itself is an insignificant influence compared to such variables as instruc-

tor enthusiasm, organization, and clarity (Adams & Britton, 1984; Connor, 1977; Moore, 1977; Lewis, 1982; Marsh et al., 1979; Williams et al., 1985; Wood et al., 1974; Wulff et al., 1987). Studies that differentiate between levels of cognitive achievement realized in large versus small classes and in affective responses by faculty and students to large versus small classes tend to favor smaller classes (Lewis, 1982; McKeachie, 1986).

The following considerations from the research literature and Ohio State practitioners can be useful when deciding whether to group student sin large or small classes.

What will be the primary purpose of the course? Small classes, or small sections within a larger class, are generally favored for the development of such skills as writing, critical thinking, oral communication, and problem solving. These skills might also be developed through creative teaching or with the assistance of instructional technology in larger classes, if effective programs, materials, techniques, and equipment are available and personal assistance is supplied as needed. If simple information transmission is the purpose of the course, large classes are more efficient than smaller ones, all else being equal.

Who is available to teach the course? Several characteristics of an instructor's teaching style and skills are closely related to how effective she or he will be in a class of a given size. A quiet, thoughtful teacher who is adept at helping students to develop their thinking in a seminar situation may fail miserably in an auditorium of 700 students. In contrast, the performer who can captivate several hundred students with powerful demonstrations, clever one liners, and rapid fire delivery may overpower or even thwart students in a small class. While most faculty can adjust their style to a given situation, few are particularly able to function well in large class settings. It is important that instructors in these settings want to be there and that they have demonstrated ability to do well. If there are no instructors available who stand out as having enthusiasm, good public speaking skills, humor, flexibility, management skills, and effective interpersonal skills in large groups, it might be better to structure a high enrollment course in small sections taught by teaching associates or faculty.

What facilities and resources are available? A common mistake is to assume that no special arrangements have to be made for large classes. High on the list of concerns of Ohio State large enrollment course instructors in our 1988 survey and in the literature, however, is dissatisfaction with facilities. Well-designed rooms, adequate climate control, acceptable acoustics, and functioning audiovisual equipment are important in any classroom, but especially so in large classes. Over 50 percent of Ohio State instructors surveyed said that obtaining appropriate physical facilities is more difficult with large classes. Resources for planning, course management, testing, duplicating print materials, and developing effective audiovisual materials are similarly extremely important for large classes. Those determining whether to group students for instruction in small or large classes, therefore, need to take facilities and resources into consideration.

How important is it for students to have a common experience? In curricula that rely on some courses to build skills or convey knowledge necessary for subsequent courses, it is highly desirable for these courses to provide common experiences for students. Large classes or multisection large enrollment courses with a common syllabus, texts, class activities, or examinations can be a way of ensuring some measure of standardization. Where a common experience is not necessary, smaller classes would be more likely to achieve individual uniqueness and diversity of perspective.

Tips from the Literature and Ohio State Faculty on Teaching Large Classes

The following tips come from the literature and from Ohio State faculty (noted in parentheses). A fuller version of these tips is contained in *A Sourcebook for Large Enrollment Course Instructors*, available at no charge from the Faculty and TA Development unit of the Center for Teaching Excellence.

Lecturing

Anything the lecturer can do to improve the quality of the student's notes will improve lecturing effectiveness. Some suggestions include:

1. Provide an outline of the main points of the lecture.
2. Include no more than four or five main points in a 50-minute period.
3. Begin by posing a question or example.
4. Clearly delineate major points verbally ("The next point is . . .") or nonverbally (stand by the lectern for major points, relax posture for elaboration).
5. Write out unfamiliar terms or names or references on the board or transparency.
6. Intersperse concrete examples of general concepts for clarification.
7. Summarize main points at the end of the presentation. (Lewis, 1987, pp. 15-16)

To facilitate student comprehension and recall, a typical 50-minute class period might involve three segments: (a) a 20-minute lecture, (b) an activity in which the students participate in some way, and (c) a summary of the important points presented in the minilecture and in the class activity. (Frederick, 1987, pp. 51-52)

I like to start off my lectures with a piece of poetry that will make my students think about the subject for the day. I also use quotes from philosophers or novelists. I find that too often students are surprised that a scientist enjoys such things; thus, this approach both draws students into the subject and challenges their notions about the profession. (Gene Poirier, Professor of Anthropology)

I find it useful to use two overhead projectors each day, even though this practice is unusual in the particular room assigned to me. I set one up against the wall with an outline that remains in place throughout the hour. The second projector is set up against the normal screen, on which I display maps, copies of sculptures, paintings, photos of aqueducts, and monuments. I recommend that all very large lecture rooms have two projectors available, even if the screen normally accommodates only one image. (Alan Beyerchen, Associate Professor of History)

Prepared class handouts, such as outlines of the lecture, descriptive problem statements, problem and test solution sheets and reading excerpts are useful for communicating essential information. When my students have this information in hand, they are more attentive. (Bruce Lonnman, Assistant Professor of Architecture)

Discussion

There are a number of ways to use questioning without humiliating students. One approach is to address a somewhat open-ended question to the class: "What were the causes of World War I?" Or, "what is the meaning of the green light at the end of Daisy's dock?" A student answer is met with a follow-up question directed at the class generally. The instructor need not put one person on the spot, for the primary point is to convey substantive content and raise further questions. A second approach is to put a question to the class and ask three students sitting next to one another to explore it for five minutes. The best kinds of questions are those not simply seeking information but those requiring students to make judgments and choices among equally compelling alternatives. (Frederick, 1987, p. 49)

Writing

The five-minute entry can be used to encourage regular writing in large classes without requiring extensive grading. At the start of each class, students write for five minutes in response to a question about the assigned reading for that day. Grammar, mechanics, and organization do not count. Papers receive an "S" or "U," the only criterion being that they must demonstrate beyond a reasonable doubt that their authors have read and thought about the assigned reading. This eliminates the need to take attendance or grade quizzes and encourages regular attendance and timely reading of assignments. (Morrissey, 1982, p. 1)

Other Learning Activities

My students were not using the library effectively because they were not getting the help they needed when they were looking for

sources. I solved this problem by asking my TAs to hold their office hours in the library beginning 10 days prior to the deadline of a critical essay. Students had immediate access to TAs when research problems arose, and the quality of their essays improved. (Goodwin Berquist, Professor Emeritus of Communication)

Learning Environments

I improve the rapport in my class of 750 students by distributing a questionnaire that asks each student for personal information (especially, "What activities do you participate in on campus?"). I tabulate this information early in the quarter and communicate it to the students in the form of statistics. When students learn that there are other members of the Ohio State marching band in my class, for instance, they have a sense of identity. Furthermore, these statistics give me an opportunity to personalize my discussion strategies, e.g., "Let's hear from one member of the Ohio State marching band on this question." (Joy Reilly, Assistant Professor of Theatre)

In order to make the space in the large class seem "small," instructors ought to do things in large course spaces that they do in smaller ones. Translated into specific suggestions, this can mean moving to locations that are more comfortable for communication. This is a good idea when responding to student questions. Even if it is not possible to reach an appropriate distance, there is value in moving part way. Distances also feel smaller when instructors do things like joining their teaching assistants in distributing handouts and in returning exams and assignments. Some instructors come to class early and wander around the room as students arrive. They ask students how they're doing in the course and answer any quick questions. (Gleason-Weimer, 1986, p. 20)

There are many ways in which a teacher can attempt to make a large class more "personal." In general these take time but seem to be appreciated. Some of the ways I use include the following:

1. Learning students' names.
2. Asking them to tell me something about themselves on the back of an information card passed out on the first day.
3. Emphasizing willingness to talk whenever I am not otherwise tied up, not just during formal "office hours."
4. Having a party at my house. (Robert F. Wing, Professor of Astronomy)

Communication Style

If you have a cordless microphone, you have an opportunity to keep your students interested in the subject of your lectures. The cordless microphone allows me to wander anywhere I wish while lecturing. I lecture from the front of the class, which is normal, or from the back. I can lecture from any seat in the hall or from outside the hall. Such moving around tends to keep the students awake. (Aronson, 1987, p. 35)

It is dangerous to copy someone else's style. Don't tell jokes if you don't enjoy telling jokes. Humor is always a great asset and can be fantastically effective in teaching. But telling a joke for the sake of it, especially one that is not funny, can backfire. Just be natural and comfortable in front of the class. The university accommodates a wide variety of personalities and students enjoy the variety. So if you are the quiet type, be quiet; if you are the tough-guy type, be tough; and if you have a sense of humor, by all means let it come out in class. Whatever your style, be sure to enjoy the experience. (Aronson, 1987, p. 33)

Testing

Even when students are pleased with the grades they received, they usually feel let down, even cheated, when the instructor tells them little about what they did well. Students who do poorly may have little idea of how to improve their future performance without guidance. Personal comments on papers (such as, "Good work, Karin," or "Nice improvement, Andy") are especially valued in large classes, where impersonality is the rule. Making copies of model or exemplary student papers available

for students who wish to see them also provides helpful guidance. As much as anything else, feedback with a personal touch will help to minimize the drawbacks of evaluation in a large class. (Lowman, 1987, pp. 78-79)

Grading

Though it doesn't happen frequently, you must be prepared in case a student decides to challenge his or her exam grade. Below are some suggestions for dealing with this problem.

1. Make the student defend his or her answer in writing using references.
2. For essay exams, let the student grade his or her own paper using the answer key. Then have him or her defend the grade if there are discrepancies.
3. Let any student who has a complaint bring it to you and you will regrade the whole exam. (The grade will usually go down if the instructor rather than the TA does the grading.) (Lewis, 1987, p. 66; Angela Dean, Associate Professor of Statistics)

Administration

One special task that bears mentioning is the need to pick up and hand back exams, announcements, and cases, and to arrange suitable office hours. We have found that the use of a set of manila envelopes labeled with auditorium row numbers has been the most efficient method for collecting and handing back student materials. We have asked the students to choose a row for the term and to sit in that row when taking exams, turning in cases, or picking up returned materials. The graduate assistants can, in the manner of "passing the collection plate," pick up and distribute course materials with a minimum of disruption while the lecturer is lecturing. (Blackwell & Scott [Ohio State faculty], 1986, p. 12)

A useful tip for returning exams: A key is typed by a word processor onto gummed mailing labels and duplicated, one for each student. The label is placed on the question set that is returned. The result is that there is no crowding around a posted key; students pick up the exam in an otherwise empty room, leave, and have no reason for instructor contact at a time of high anxiety or anger. It would be helpful to have the computerized grading system in Lincoln Tower [Ohio State Office of Testing location] print gummed labels with the student's name, exam grade, answers and a key typed on the label. (Jim Grossie, Associate Professor of Physiology)

Summary

Two sets of issues that are involved in discussions of large enrollment courses have been discussed above. The first set has to do with the appropriateness of grouping students in large numbers for instruction. Determining appropriateness involves careful consideration of the purpose of the course, the instructor, the facilities and resources, and the place of the course in the curriculum.

The second set of issues revolves around the use of effective instructional strategies in large course settings. The pedagogical strategies here and other information on teaching skills and the use of technology in large class settings focus on ways of making the class smaller through actively engaging students, personalizing instruction, and using efficient management techniques.

The answer to the often-asked question, "Does class size matter?" is greatly dependent on how well the two sets of issues, those involving the appropriateness of the grouping and the effectiveness of the instructional strategies, have been addressed in a specific situation.

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With this issue, *Notes on Teaching* concludes publication for the 1988-89 academic year. We look forward to resuming publication in September. If you would like to submit an article for publication, guidelines for contributors are available from the Publications Coordinator at the address given below.

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