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Policy Challenges to Governing Learner Appropriate Online Class Sizes in Higher Education

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One of the more intriguing policy developments in education today is the expansion of blended and fully online course delivery. Often at the behest of lawmakers and lobbyists, many colleges and universities are devoting massive resources in support. It is fast becoming a prominent feature in many institutions. To be sure, research over online programming and how it impacts student learning is ongoing. One key aspect to online learning is class size.

Purpose and Research Questions

The purpose of this brief is to provide an update on the most current research regarding the link between class size and academic effectiveness. We sought to identify nuances and subtle aspects, which could prove helpful in assessing the impact of online course delivery in colleges and universities. The inquiry was designed around several important questions:

1. What are the intended and unintended effects of online class size?
2. With respect to class size, does online course delivery yield more positive learning outcomes and is there variance across specific academic subjects?
3. What are the costs-benefits to managing online class size to enhancing the overall academic experience?

Interestingly, few researchers (e.g., Artz, 2011; Bettinger, Doss, Loeb, & Taylor, 2015; Bordon & Burton, 1999; Gibbs, Luca, & Simonte, 1996; Hancock, 1996; Kennedy & Siegfried, 1997; Monks & Schmidt, 2010; Noble, 2000) have assessed the impact of class size on the learning experience/outcomes in higher education, and far fewer have done so in the context of online[1] education. All the while, more students are enrolling in online courses. Roughly a decade ago, 3.5 million students were enrolled in at least one online course in higher education in 2006, which reflected an actual increase of 10% over the previous year (Allen & Seaman, 2006). A Survey of Online Learning from the Babson Survey Research Group found 6 million students in 2010 had enrolled in at least one online course (Allen and Seaman, 2011).

This figure reflected a 10% growth rate in terms of online enrollments, which exceeded the minus 1% growth in the overall higher education student population nationally. A more recent report revealed that nearly 1 out of 3 students enrolled in some form of online education (Allen & Seaman, 2013). Without question, online education appears to be trending toward rather than away from institutionalization.

The Tipping Point

Current enrollment trends suggest higher education may be reaching what Gladwell (2002) calls the "tipping point." Gladwell's (2002) tipping point is a moment of change for an idea or trend that is unstoppable. In this case, the tipping point is the shift towards online education in higher education arenas that has resulted from increased student demands for online courses outpacing college/university's supply. This new marketplace has led some university administrators to view full online programs as cash cows (Brown & Green, 2003; Jaschik, 2010). Due to sparse information about growing numbers in online class sections and course effectiveness, there continue to be questions from faculty members, higher education administrators, public and private parties, and policymakers about how they might evaluate and better understand optimum class sizes for their online sections.

A research synthesis (Irby & Lara-Alecio, 2012) on this topic uncovered a wide variety of average and maximum class sizes noted in the literature. The number of students in online classes falls between 15 and 700 across studies reviewed. Outliers included extreme enrollments of over 2000 students in traditional university courses and open no cost course offerings. Other examples of outliers may be found in *The Digital Campus* (The Chronicle of Higher Education, 2012). These numbers mat also not fully account for the recent massive open online courses (MOOC[1]s), which are typically free or for a small-fee courses where course materials are dispersed across the web via a specific platform. Participation in some case may be limitless.

Research on Online Class Size

Not surprisingly, recent research regarding online class size explores areas such as student satisfaction, learning outcomes, student engagement, student/faculty interaction, and collective inquiry. Further, because more studies have probed undergraduate online contexts, less is known about graduate online class sizes and what it means for students' learning experiences. A few studies have generated some noteworthy findings.

Qiu, Hewitt, and Brett (2012) explored class size and students' engagement in note reading and taking as well as collaboration among students. Findings revealed that although the amount of note taking increased as class size increased, the length of notes posted and quantity of notes read by the students diminished.

In a study of the impact of class size on learner participation, satisfaction, and student learning outcomes in a computer programming course, Shaw (2013) found no statistical relationship between class size and learner outcomes according to results on a final exam. However, statistical relationships did emerge between learner satisfaction and class size (i.e., the smaller the online class, the greater the level of student satisfaction) and participation (i.e., the smaller the online class, the greater the level of student engagement). The same study also reported a positive relationship between greater student participation in online classes and higher student learning outcomes.

While no statistical differences were found between cohort class sizes in the areas of respect for diverse ways of learning and feedback to students, the level of participation was significantly different between the larger and smaller groups, where greater engagement was found among the smaller groups. The researchers also found student faculty interaction occurred less often in larger online groups but peer interaction occurred at a greater level for the same group.

Learner engagement/involvement may be the critical variable to the success of online coursework. One study (Oztok, Zingaro, Brett, & Hewitt, 2013) found a stronger learning community was nurtured through the integration of synchronous online collaboration (e.g., opportunities for private messaging in course discussion platform). Another found (Stricker, Weibel, & Wissmath, 2011) *heavy* users of online course supplements in traditional face to face courses performed superior on a final exam compared to non-users. The studies together seem to suggest benefits to developing multiple avenues for student inquiry.

This revelation is further supported by a published review of literature (Gikandi, Morrow, & Davis, 2011). While the review reported greater learner engagement and sense of community through online education, it also found that collecting formative feedback (capturing student experiences and perspectives as the course is proceeding) vis-à-vis summative feedback from key actors was pivotal in sustaining effective online programming. A study (Bettinger et al., 2015) of over 230,000 students in more than 168,000 sections of 750 different courses and with one-third of the students taking courses both online and in-person found online course experiences at the undergraduate level did not positively impact students learning. As the analysis suggests, learning outcomes reduced by one-third to one-quarter of a standard deviation when compared to face-to-face classes. Greater variability in quality of student performance was found in online classes compared to face to face.

Summary

In summary, prior studies appear to support claims that class size does matter with respect to student engagement and course satisfaction. Clearly, more studies are needed given the knowledge gap related to optimum class size for online courses. The notion of a tipping point is likely a foregone conclusion in view of the increased presence of online course options. However, what is less clear are class size effects in graduate education courses.

Knowledge Gap Issues

According to Irby and Lara-Alecio[1] (2012) in their narrative review, only a handful of researchers (e.g., Abdul-Hamid & Howard, 2005; Reonieri, 2006; Orellana, 2006) since 2000 have investigated optimum class size in online courses. Gaps in the knowledge based in terms of optimum class size for online courses include the following:

- There are few research studies on optimum online class size in higher education that are published for consumption;
- There is a lack of research of online class size and the impact it is having on learning outcomes;
- There is scant research published on online class size and program quality;
- There is a lack of published studies on the impact of online class sizes and instructors' time involvement in higher education;
- There is a lack of researchers (e.g., Polnick, Ritter, & Fink, 2011) studying online class size related to gendered participation;
- There is a lack of research on the impact of open course online education on higher education finances, on learners' engagement and outcomes, and on instructors[1]' pedagogical practices.
- There is a lack of research on financial implications of public universities partnering with private entities to provide online education at a reduced costs, and
- Most researchers have utilized undergraduate online classes to address issues of online class size; therefore an additional gap in the knowledge base is the lack of studies by researchers (e.g., Brown & Green, 2009; Lee & Nguyen, 2007) who investigate the graduate program online class size numbers issues. Indeed, the largest national survey (Allen & Seaman, 2011) does not discriminate between online undergraduate education and online graduate education.
- There are no known studies on the impact of MOOCs, with their massive numbers of students enrolled in open courses, on (a) faculty engagement, pedagogy, time commitments, salary, and tenure and promotion; (b) university enrollment and budgets; (c) university accreditation-related issues, (d) private companies' engagement in and offering of MOOCs, and (e) students' learning.
- Future studies addressing these knowledge gaps will be needed to build a more comprehensive repository of information regarding the positive and negative effects of online class sizes.

Policy Recommendations Based on Knowledge Gap

Based on the current gaps in literature and our own experience in the field, we offer nine general policy and research recommendations related to online class size in higher education.

1. Large national organizations by disciplines (such as education, history, criminal justice) should consider establishing a research agenda to evaluate online instruction within their own disciplines.
    a. Baseline data should be gathered by discipline and by graduate and undergraduate education programs, which will establish minimum and maximum numbers in online courses.
    b. Additionally, by discipline, a general percentage of the course being taught online needs to be established for defining online education.
2. State higher education boards or authorities should gather data on online course enrollments and publish such data for public record.
3. Funding agencies, such as the Institute for Education Sciences or the National Science Foundation, should consider funding large scale research on learning outcomes and/or instructors' time engagement in online education compared to learning outcomes in face-to-face courses related to class size in higher education degree programs..
4. Federal and private funding and accrediting agencies should be encouraged to engage higher education faculty members in attending to rigorous research related to online class size and program quality at the undergraduate and graduate levels.
5. The National Institute for Health and other private foundations that support gender research should consider promoting research that provides answers regarding online education at the undergraduate and graduate level related to gender and other student characteristics such as socio-economic levels.
6. Encourage the national survey by the Babson Survey Research Group to separate undergraduate and graduate information gleaned from the survey results.
7. Researchers should conduct financial cost benefit analyses regarding online education and class size. This research should include an analysis of traditional university online program offerings, as well as that of atypical partnering of public universities with private entities to offer online courses and programs at a reduced cost with scaled numbers of students.
8. Researchers should take stock in the open field of research that is arising from MOOCs. It is critical that decisions on MOOCs be not only made based on economic factors, but also on quality pedagogical and learning issues.
9. Consider what we call Massive Open Online Professional Learnings (MOOPLs; Irby, Lara-Alecio, & Tong, 2013) for professional development. This type of free or inexpensive professional development for teachers, administrators, and other school personnel could be a beneficial partnership for higher education and local education agencies, and may change policies on professional learning communities online. Class size for MOOPLs would need to be studied for optimization for learning.

Policy Considerations

Just as it will be necessary to address the knowledge gaps to more fully understand the impact of online class sizes in higher education, particularly for graduate education, so too will it be important to explore ways to govern and manage the rapid growth. The degree of regulation over online classes will largely depend on the type of policy instrument sought. Generally, policy instruments fall into two broad categories-economic or regulatory. The most common policy instruments are inducements, capacity-builders, system-changers, and hortatory (McDonnell & Elmore, 1987). As student enrollment preferences continue to tip towards online classes, it will be important to know which will be the favored policy instrument government agencies or higher education administrators use to achieve the desired outcomes of class sizes and online class learning.

Economic policy instruments. Policy instruments that are considered economic use financial incentives to induce desired behavior. With *inducement* policy instruments, there is typically a transfer of money or resources to help achieve the desired outcome or at minimum spur change (McDonnell & Elmore, 1987). *Capacity building* policy instruments would also fall under the economic category. These policy instruments also include a transfer of money or resources, but that exchange is specific investment in human capital to improve a product, process, or outcome (McDonnell & Elmore, 1987). Since online classes are increasing in popularity, it makes sense that higher education institutions use these types of policy instruments to encourage greater online enrollment in an effort to generate economic growth for their college or university. This may appear as higher education institutions offering financial incentives, reduced teaching load, or increased professional development for faculty who teach online classes. As these types of policies emerge, it will be helpful to understand if the policy instrument selection is a result of higher education institutions' attempt to meet the rising demand or from a need to stay fiscally healthy, for example.

Regulatory policy instruments. Both mandates and system changers would be considered regulatory policy instruments. With system changer policies, there is a complete transfer of authority or change the arrangement of agencies in the system (McDonnell & Elmore, 1987). These policy instruments delineate specific rules to govern action and the expectation is complete compliance. Effects of regulatory policy instruments may look like caps (or removal of) on online class sizes, change in requirements (e.g. degree, curriculum, attendance) as examples.

Hortatory policy instruments do not fit neatly into the economic or regulatory category, as these instruments reflect the goals and priorities of those in power at the time. Those who choose hortatory policy instruments, may desire compliance or support for a policy, but would like to do so without reliance on mandates or use of incentives (Schneider & Ingram, 1990). They believe that to win over those who must carry out the policy, they must appeal to their values, beliefs, or preferences (Schneider & Ingram, 1990, p. 520). This may be actualized as an administrator creating a strategic goal or making a public stance on online classes and class sizes in a way that compels actions or influences the decisions of others. Legislators or administrators may use this approach to reframe thinking about the quality of online classes, value of online degrees, or the relationship between class sizes and online courses. Regardless of the selected policy instruments used to help govern online class sizes, understanding policy instrument use, whether motivated by economic or academic pursuits, will be critical to understanding the impacts of online class sizes comprehensively.

Final Thoughts: Emphasis on Policy and Research for Online Class Size

We emphasize that policy and research are mutually connected when it comes to understanding online class size and the impacts class size has on students, faculty, and a university's budget. Whether through large discipline-specific national and state organizations, state boards of higher education, federal funding agencies, and or private funding agencies, the myriad of aspects germane to online class size at both undergraduate and graduate levels deserve greater scrutiny. Assessing program quality and pedagogical impacts should also account for student characteristics. One overshadowed concern relative to online education growth and larger class sizes is the unintended impact decreased enrollment in traditional face-to-face courses might pose on the university town and surrounding communities, economically and culturally. The final recommendation related to policy, research, and online class size is one of *urgency* or what Kingdon (2003) described as acting upon the unpredictable policy window —so as not to be left in the dust of a growing movement. Knowing exactly where, what or how to regulate online course size remains an open question. Future studies will need to address the knowledge gaps to better inform policy and administrative decisions.

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