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Massification in higher education: large classes and student learning

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Abstract In introducing the special issue on *Large Class Pedagogy: Opportunities and Challenges of Massification* the present editorial takes stock of the emerging literature on this subject. We seek to contribute to the massificaiton debate by considering one result of it: large class teaching in higher education. Here we look to large classes as a problem in promoting student learning, quality education, and consequently as a challenge to socio-economic development. That said, whilst large classes do pose very specific challenges, they also hold promise and opportunities for innovation in support of student learning. Here we consider the contributions to this special issue from a cross section of disciplines and higher education environments.

Keywords Large class teaching · Student learning · Adaptation · Massification · Development · Teaching strategies

Introduction

The present editorial considers the topic of large classes as part of the trend of massification in higher education and introduces the contributions of this special issue. We seek to advance the debate by framing large class teaching in higher education as a problem for student learning and quality education which can have implications for a country's socio-economic development. This special issue builds on an emerging debate that challenges present day perceptions that large class learning environments are void of any pedagogical value (Hornsby et al. 2013). Indeed, many of the contributions here consider the

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opportunities and challenges for student learning in large classes, how this can be improved and if quality education can be achieved. Whilst a number of important conceptual issues are raised in the special issue, many of the contributions here provide important empirical evidence of how teaching innovations and adaptations have been successful at overcoming some of the challenges that large classes environments hold for student learning.

The issue of large classes is connected to the trend of massification, which is a term used to describe the rapid increase in student enrolment that was witnessed towards the end of the twentieth century (Scott 1995). Massification, as a process, challenges the traditional form of universities as centres of elite education where only a select few gain access (Trow 2000). Indeed, Varghese (2013:10) notes that gross enrolment ratios of those seeking higher education globally has risen from 13.8 % in 1990 to 29 % in 2010. Whilst the same degree of enrolment does not exist in Sub Saharan Africa, which has a lower higher education enrolment rate, there has still been more than a doubling of gross enrolment ratios from 3 % in 1990 to 7 % in 2010 according to UNESCO Institute for Statistics figures (Ibid: 10–11).

This increased enrolment represents significant changes in many countries higher education systems and appears to be occurring, at least in part, due to evidence that links higher education to improved health, empowerment and economic development (Bloom et al. 2005; OECD 2008:4; World Bank 2002). Further, such a phenomenon is a result of the democratization of education and the social justice agenda in many countries (Altbach 1992). By democratization we refer to a process where access to higher education is viewed as an integral element in resolving social and economic inequalities present in societies. The effect of this is felt beyond a pure increase in student numbers with impacts in the composition, character and aspirations of student populations and thus, has the potential to profoundly transform higher education sectors and states as a whole (Gibbons 1998). This is further understood when considering the Bloom et al. (2005:16) argument that higher education can lead to both private and public benefits for a country. Private benefits are seen in the rise in employment prospects, incomes and ability to invest and save money. This leads to improving productivity since higher education is tied to overall better health and longer life expectancies. As for public benefits,

> [h]igher earnings for well-educated individuals raise tax revenues for governments and ease demands on state finances. They also translate into greater consumption, which benefits producers from all educational backgrounds. In a knowledge economy, tertiary education can help economies keep up or catch up with more technologically advanced societies. Higher education graduates are likely to be more aware of and better able to use new technologies. They are also more likely to develop new tools and skills themselves. Their knowledge can also improve the skills and understanding of non- graduate co-workers, while the greater confidence and know-how inculcated by advanced schooling may generate entrepreneurship, with positive effects on job creation (Bloom et al. 2005: 16).

Given all of these benefits, it makes sense why massification of higher education is being pursued by states. Of course this process translates differently across social contexts and the effects too are varied, but it appears clear that the political push towards massification is driven by an altruistic intent. Whilst this is noble it is important to interrogate the impact that increased student enrolments in higher education are having on the learning environment, particularly as it relates to the issue of class size.

Indeed, it appears that growing class sizes have been a direct effect of massification as there has been no proportionate increase in human, financial, and physical support from

public sources in the higher education sector globally (Mohamedbhai 2008). This means as enrolment grows, universities are being expected to accommodate greater numbers of students with less resources. It is interesting to consider that greater support has not been forthcoming despite a literature on large classes that generally considers them a challenge to the quality of the learning environment. As such, this special issue speaks to a tension that exists between the process of massification, its effects, and the pedagogical requirements for quality higher education.

Unpacking large classes

There is a long-standing belief that the number of students in a class affects the quality of the learning environment (Ehrenberg et al. 2001; Cuseo 2007). In particular, large classes are believed to correlate with low student performance. However, class size in and of itself is not a distinguishing feature of student performance; rather, class size matters in relation to education goals and the quality of the educational experience (McKeachie 1980). In higher education, goals move beyond simple knowledge acquisition to promoting student engagement and higher order cognitive functions such as problem solving and critical thinking—characteristics of deep learning. Here, class size does matter and can affect the quality of student learning (McKeachie 1980; Cooper and Robinson 2000; Mulryan-Kyne 2010).

Class size has typically been problematized in the light of research findings that most students enter higher education environments with learning strategies constructed around the memorization of facts and the simple reproduction of knowledge, or so-called surface learning (Exeter et al. 2010). Such students need to be shown how to adopt the problem solving and critical thinking skills crucial for an innovation economy and a knowledge society (Biggs 1999). Unfortunately, large class learning environments typically are counterproductive to this need, as they tend to reinforce didactic teaching styles. The performance of those students who require interaction for motivation is especially likely to suffer when the amount and intensity of student–teacher interaction decreases, as tends to happen in large class environments (Mulryan-Kyne 2010; Exeter et al. 2010). The problem of large classes is further compounded by research that shows that students also exhibit poor levels of engagement with material, less commitment to courses and lower levels of motivation when presented with large classes (Mulryan-Kyne 2010). This suggests that large classes are not learning environments conducive to establishing higher order cognitive skills.

That said, large class environments appear to be a phenomenon that is here to stay. As such, the special issues is motivated by finding adaptive responses and looking for cases of innovation that try to counter the challenges posed by large class learning environments. We ask such questions as: how can institutions of higher education in developed and developing countries turn this problem into an opportunity? How can quality education, defined as fostering the adoption of higher order cognitive skills like problem solving and critical thinking, be achieved in a context which is not conducive to student engagement, motivation or performance?

Such questions require considering the conceptual implications of large classes in addition to practical responses. To date there is an emerging literature that focuses on large class pedagogy and higher education, particularly as related to developing countries (Hornsby et al. 2013). The special issue contributes to this discussion and broadens the scope to consider experiences across different disciplines and in developing and developed

countries. The purpose of doing this is to consider how adaptation and innovation in support of quality education is taking place in a diversity of environments.

But let us be clear, the special issue does not argue that large classes are an ideal context for learning or that they are preferred. Rather, we seek to present how efforts to adapt to and innovate in light of large classes can reinforce student learning and ensure quality education.

In arriving at this premise we are supported by an existing literature related to student learning that provides some important insights that can counter the challenges posed by massification and large class teaching. For example, student learning strategies can be adapted in order to ensure successful completion of a course (Biggs 1999). Such student resilience and ability to adapt is encouraging, and highlights the important roles that teaching and assessment strategies play in student learning (Mulryan-Kyne 2010; Exeter et al. 2010; Meyers and Nulty 2002). Curriculum design, instruction techniques and assessment all influence student learning outcomes and engagement (Powell 1982; Kember 1998; Marton and Booth 1997; Rowntree 1987; Bolton-Lewis 1998; Biggs 1999). Meyers and Nulty (2002) contend that to maximize the quality of students' educational experience, learning environments must be constructed which ensure that students' adaptive responses to the curriculum become congruent with the aims of the course (Boud 1982; Ramsden 1992; Biggs 1996). As a result, by focusing on the structure of the curriculum, the strategies employed for instruction and the way students are assessed (Biggs 1996; Meyers and Nulty 2002), problems associated with large class teaching environments can be addressed and quality education ensured.

In defining what constitutes a large class, we eschew assigning a numerical threshold, but rather consider them as environments where the quality of student learning may be impacted, negatively, by the number of students in the class (Hornsby et al. 2013: 8). Given the diversity of learning contexts and approaches to learning that exist, varying approaches to and styles of learning, unequal access to teaching and learning support mechanisms, unique disciplinary milieus, and the particulars of developed and developing countries higher education systems—a large class may be defined in different terms depending on the discipline and/or the pedagogical needs of the learning environment. For example, in the Fine Arts, any class with more than fifteen students may be considered large, whereas a first-year Biology class would be defined as large if the number of students exceeds a hundred. A higher education institution with limited access to teaching technology may have a different experience from one with ample technological resources when it comes to what constitutes a large class. While we do not want to discourage assigning numerical thresholds for conceptual purposes, we consider the concept of a large class to be broader and wish to advance an interdisciplinary debate about how to cope and work within these environments pedagogically as opposed to imposing a numerical shackle.

Special issue contribution

The present special issue contributes to the emerging literature by unpacking the pitfalls and opportunities associated with teaching large classes in higher education. This issue is considered from a cross disciplinary perspective, seeking insights from cultural studies, political science, law, chemistry, economics, and of course, education. Thus, there are practical and useful insights for a range of institutional and disciplinary contexts. Further this issue combines insights and experiences from an international set of scholars in developing and developed countries and highlights how large classes can be thought about

and where opportunities for innovation are available in these teaching and learning moments. Here it is possible to see that many of the challenges are similar, but clearly the stakes are greater for developing countries that seek to integrate higher education as part of development strategies (Hornsby et al. 2013).

The first two articles engage in the conceptual debates underpinning large class teaching. They frame the problems and opportunities associated with of large classes, taking into account political economy considerations like socio-economic development. Allais, in her paper entitled *A Critical Perspective on Large Class Teaching: The Political Economy of Massification and the Sociology of Knowledge* seeks to analyse the whole purpose of having large classes from a political economy of higher education and sociology of knowledge perspective. She asserts that the push towards large classes is folly as it ignores the need for student–teacher interaction in the transfer of disciplinary knowledge. Allais, argues that in this sense massification dilutes the quality of education, does not necessarily involve the creation of more jobs, and will result in offering less education to more people. She argues that this will have deleterious effects on societal and economic development in developing countries, in particular. In contrast, Arvanitakis in his paper *Massification and the Large Lecture Theatre: from Panic to Excitement* considers massification to have positive elements that need to be highlighted such as the democratisation of higher education and access to knowledge. The argument of Arvanitakis primarily revolves around the social justice aspects of massification as he considers increasing access to higher education as a public good and a way to break down elite structures. Further, he adds that universities need to be equally focused on producing engaged students and citizen scholars willing and wanting to make an impact, thus massification is also part of a social responsibility. Indeed, Arvanitakis sees massification for its transformative and engagement potential, and challenges Allais' previous work by arguing that quality education, particularly the transfer of knowledge, is not restricted to university environments alone and can exist in large class environments if lecturers are willing to "act like a pirate"—adapt and be resourceful.

The next three papers present models for adapting to large class environments and engage with the broader conceptual issues presented by Allais and Arvanitakis. In Woollacott, Booth, and Cameron's paper entitled *Knowing Your Students in Large Diverse Classes: A Phenomenographic Case Study,* ways in which adaptation can occur and how lecturers can get to know their students in large class environments are considered. Based on the efforts of an international collaboration, Woollacott et al. agree that student–teacher engagement is important and propose a phenomenographic method for getting to know students better. They adopt a case study of entrants to a chemical and metallurgical engineering programme in South Africa and identify the learning practices of the students, showing how knowing your students at a collective level can be helpful in informing pedagogical measures that enhance learning. Maringe and Sing seek to consider the issue of large classes in the context of an internationalisation agenda in higher education. In their paper *Teaching Large Classes in an Increasingly Internationalising Higher Education Environment: Pedagogical, Quality, and Equity Issues*, the authors argue that demographically diverse large classes struggle to address equality and diversity of student learning issues which can impact the equalizing/social justice element of higher education. In that sense, universities in developing countries need to think collectively about how to cope with diversity of educational background, in addition to culture, ethnicity, race. Here, Maringe and Sing presents eight pedagogical strategies to reconcile issues of diversity with quality and equity challenges that exist in large classes. Prosser and Trigwell in *Qualitative Variation in Approaches to University Teaching and Learning in Large First-Year Classes*

consider the effectiveness of two models for teaching against student learning in large classes—an information transmission and teacher focused approach (ITTF) versus a conceptual change and student focused (CCSF) approach. Based on data collected from large classes in Australian universities, the authors argue that a CCSF model is more effective at challenging students to think deeply, critically and creatively in large classes. They note that integral to this is ensuring lecturers are supported sufficiently so that they can take into account the diversity in student approaches to learning. Further, they contend that students are more likely to adopt a deep approach to learning in large first-year classes if their teachers perceive that their ability and background enables them to succeed and if they adopt a student-focused approach to their teaching. This raises important considerations, particularly for developing countries where students from marginalized backgrounds may be perceived to have less chance or ability to successfully complete higher education.

A number of the articles in this special issue consider technology, good practice and its use in large class environments to be integral in adapting to the challenges of the learning environments, particularly in developing country contexts. Foley and Masingila in *Building Capacity: Challenges and Opportunities in Large Class Pedagogy (LCP) in Sub-Saharan Africa* compile the results of a cross country survey on faculty development and capacity building in Kenya, where large classes are seen as one of the few ways to cope with the growing demand for higher education. The survey represents a new set of data and empirical evidence regarding the African experience from 10 higher education institutions. Here the researchers gathered information on the types of technology available and utilized and offer analysis on how such things as mobile technology and SMSing can be used in dealing with large class environments. Shrivastava and Shrivastava in *Political Economy of Higher Education: Comparing South Africa to Trends in the World* consider the effects of neoliberal policy-making on higher education in South Africa and Africa more broadly. They note that care is required to ensure that massification is not driven by the corporatization of higher education which they argue risks overriding local societal and technological constraints. After analyzing the state of affairs in South Africa, they bridge the conceptual-practical divide by comparing how technology used to support Massive Open Online Courses (MOOCs) and more local mobile technology can be tools to cope with massification and large class teaching in developing country higher education systems. Snowball in *Using Interactive Content and Online Activities to Accommodate Diversity in a Large First Year Class* offers an in depth look from the Economics disciplinary background to how face-to-face teaching can be combined with online activities to offer a blended learning approach. Snowball demonstrates how this method can be effective at accommodating diversity in student learning in a large class environment at a South African university. The findings in this paper offer empirical evidence in support of the benefits of blended learning in large class scenarios, particularly in economics. Clarence Albertus, and Mwambene in *Building an Evolving Method and Materials for Teaching Legal Writing in Large Classes* consider the fostering of higher order cognitive skills through developing a critical writing model for a large law class in South Africa. *Clarence* et al. highlight the challenges that exist in South Africa where the home, educational, and linguistic backgrounds differ dramatically amongst the student population. By creating a learning environment that prioritizes continuous practice and feedback, the authors argue that improvements in form of writing (legal briefs) and grammar and spelling can be achieved.

Moving the large classes debate forward

Large class teaching in higher education is an important aspect of massification that deserves greater attention. Indeed, we have focused on this topic as it is one of the most tangible and clear impacts of massification which presents conceptual challenges that require adapting our teaching practices. As such this special issue aspires not to be an exhaustive consideration of massification, but to promote debate and discussion over one element of it. Indeed, we have offered a chance to consider the bad and the good of a trend increasingly common in higher education sectors across the world.

It is evident from the papers presented in this volume that the challenges of large class teaching can be overcome when lecturers privilege student learning in their pedagogical designs. Throughout many of the papers, lecturers proposed models—both conceptual and practical—rooted in interdisciplinary cases that show how research driven responses to large classes can be effective in ensuring quality higher education is achieved. Further, the special issue highlights that experiences of developing and developed country higher education environments are similar substantively. That is, both types of environments struggle to deal with diversity in student approaches to learning, and how to promote student engagement and higher order cognitive skills such as critical thinking. Indeed, all give consideration to the role of technology in counteracting the negatives of massification.

Another particular contribution that this special issue makes is in presenting a number of articles that offer an African response to massification and large class teaching. Such a response highlights that much consideration is being given to a fundamental development question in Africa: quality higher education. That said, more research is warranted, particularly when considering technology and higher education in developing countries as a response to large classes. In some cases, issues of affordability, capacity to maintain or develop technological software, access to appropriate technological resources (i.e. functioning and internet enabled computers) can act as barriers to utilizing technologies as a tool to assist in coping with massification. Further insight into teaching innovation and adaptation with technology in such a context is required.

More research is also required looking to common policy perceptions that massification and large classes, in particular, result in increased number of graduates for fewer resources. On the surface, this suggests that society will be better off due to the positive correlation between education and health, education and economic potential. However, such beliefs assume that with larger class sizes, the quality of education or rather the quality of the educational experience does not change. Whilst the number of graduates may increase, those who leave higher education contexts with the skills necessary to contribute to the economic and social development of society still needs to be interrogated. In addition, the effects of large class teaching on academic infrastructure, on academics, and in particular on academic output have not been considered. As such, research should be conducted on the political economy of large class teaching in terms of the cost of inputs and benefits derived. Are there examples in other regions that could highlight best practices or pitfalls to avoid?

Much of this special issue has treated the notion of quality education and student learning as intertwined concepts that are under threat in large class environments. However, we cannot forget about those students with particular needs, specifically, what is the effect of large classes on identifying and accommodating such students? What measures can be put in place to account and accommodate for students with learning disabilities or even high potential students. In deeply unequal societies, how are students from disadvantaged backgrounds treated against those who come from privilege? Investment in

practical approaches that allow for identification of struggling and excelling students, would seem to be important and deserving of further interrogation.

Finally, in advancing this debate, focusing more succinctly on student experience could offer exciting insights on how to cope with large classes. Developing an understanding of the skills and processes that students use to cope and excel in these contexts would provide helpful insights into the quality education debate. Can mentoring and student development take place in a large class? To what extent does the use of technology matter to students?

As we conclude this introductory editorial there are still many questions left to be answered regarding this aspect in the massification of higher education. But it seems apparent and important to remember that in seeking to achieve quality education it is necessary to forefront student learning in our higher education environments, particularly in developing contexts. With this in mind, large classes in and of themselves are no longer insurmountable obstacles in efforts to foster higher order cognitive skills and in the process to achieve innovation and knowledge based economies. Indeed, they can offer as many opportunities as they do challenges.

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