take account of differences in student intake and flag statistically significant differences is a marked improvement on university rankings. Such rankings tend to privilege institutions with more middle-class students and, because they are simply a rank order, differences of many places are usually meaningless in terms of differentiating the quality of what is offered. However, there are issues. First, it is clear that quality resides at the level of particular programs rather than institutions (the same institution can have very good and very poor programs), but students will not get any information about this until at least year 4. Even when they do, initial assessments of the available data suggest that they will not be robust enough to provide meaningful information at this level.

> **One of the central ideas behind the TEF is that in order for institutions to raise fees in line with inflation, they will need to show that they are offering students a high quality undergraduate education.**

What Will Happen in the Future?

The future of the TEF looks more concerning. It is clear that the government want to increase the number of metrics that are used and have already strongly signaled that they want to develop a metric related to the contact hours that students receive. The problem is that there is simply no evidence that this is a valid measure of teaching quality, while things that we do know are crucial in shaping the quality of teaching, such as the expertise of those who teach, are not even being discussed as potential TEF metrics. If the TEF ends up being based on measures that are unrelated to the quality of teaching, then the danger is that it will be more about institutional game playing than it is about excellent teaching. Focusing on contact hours is particularly problematic, as the most likely outcome is that institutions will redefine what they measure as a contact hour in order to improve their score. This will lead to apparent increases in contact hours without anything changing about students' actual experience. This is the crucial test that any metric must pass: improvements in the score on the metric must only be possible through improvements in quality of teaching that students experience.

The problem appears to be that too little account is being taken of the over forty years of research evidence about what leads to high quality teaching in higher education. This is again reflected in the assessment criteria that un-derpin the judgements of excellence within the TEF. For example, the assessment criteria that are being used to consider teaching quality (there are other criteria for the learning environment and student outcomes) are a strange mixture of elements: encouraging student engagement; the institution valuing teaching; ensuring courses involve rigor and stretch; and effective feedback on student work. Whilst they might appeal to a common sense notion of what students need, it is difficult to understand the basis on which these were included and others, such as teaching expertise, were excluded. Overall, it is not at all clear how they form a coherent whole that tells us something important about the excellence of teaching or what the view of teaching is that underpins them.

Conclusion

In conclusion, it appears that the TEF has the potential to provide valid information to potential students about the quality of higher education courses at different universities. With students bearing the increasing costs of their degrees, such valid information is crucial. However, this potential is unlikely to be realized unless more account is taken of research into high quality teaching in higher education, and what we know about the ways in which institutions respond to the introduction of performance measures. ∎

The Use of Academic Libraries in the Digital Age: What the Numbers Say

Donald A. Barclay

Donald A. Barclay is deputy university librarian, University of California, Merced, US. E-mail: dbarclay@ucmerced.edu.

Thanks to digital technology, today's higher education students and faculty have access to quantities of information that would have seemed like the stuff of science fiction just a few decades ago. Some of this digital information is freely available to anyone, while some is purchased (at considerable expense) by campuses for use by their communities of scholars.

Given the early twenty-first century's wealth of information, it is a fair question to ask: "Are we approaching a time when academic libraries will no longer be necessary?" On the affirmative side of this question, it is easy to imagine a future in which:

•library-managed print collections no longer play much, if any, role in scholarly communication;

•acquiring information resources for a campus becomes a job more suited for a campus purchasing officer than a team of librarian bibliographers.

But as easy as such a future is to imagine, it is just as difficult to predict if and when it might become a reality. What we do know with some certainty, however, is how academic libraries have been used over the last decade or so. What the numbers say may be surprising to many.

Academic Library Use in the United States

Circulation of physical items (books, DVDs, etc.) in US academic libraries has been on a steady decline throughout the web era, falling 29 percent from 1997 to 2011. More tellingly, over the same time span and among the same academic libraries, the annual number of circulations (of books, DVDs, etc.) per full-time student dropped from 20 circulations to 10 (down 50 percent).

Electronic scholarly journals have driven their print-format predecessors to obsolescence, if not quite extinction, while e-books have become increasingly plentiful. In 2012, US academic libraries collectively held 252,599,161 e-books. This means that over the course of about a decade, US academic libraries have acquired e-books equal to about one-fourth the total number of printed books, bound volumes of old journals, government documents, and other physical items acquired by those same libraries since 1638—the year Harvard College established the first academic library in what is now the United States.

Given only the above numbers, the hasty conclusion would seem to be that everything is online and nobody uses academic libraries any more. But not so fast. Even while circulation numbers were tanking, the data show a steady increase in the number of people actually setting foot in academic libraries: the cumulative weekly gate count for the 60 largest US academic libraries increased nearly 39 percent from 2000 to 2012. Library gate count data for all US institutions of higher education show a similar increase (38 percent) from 1998 to 2012.

Trends in Academic Libraries Outside of the United States

One question raised by the US academic library data is whether or not similar changes are taking place in other countries. While finding current data on academic libraries outside of the United States is easy enough thanks to the Online Computer Library Center's Global Library Statistics, and organizations like the European Bureau of Library, Information and Documentation Associations, finding older data in order to see how the use of academic libraries has

changed over time is more challenging. Though the countries listed below do not come close to presenting a complete global picture of the academic library, the trends they show are similar to what is seen in US academic libraries.

United Kingdom. As in the United States, in the United Kingdom the number of physical items borrowed from academic libraries has declined, dropping 11 percent over the last ten years. In spite of this decline, the number of academic library visits in the United Kingdom has held steady at 55 visits per student, per year, over the last ten years.

Denmark. In Denmark, the number of physical items loaned by academic libraries dropped from 2,945,109 items in 2009 to 1,938,206 in 2015 (down 24 percent). Yet, over the same time period, the number of visits to Danish academic libraries rose from 3,849,887 in 2009 to 5,662,446 in 2015 (an increase of 47 percent).

> **Given the early 21st century's wealth of information, it is a fair question to ask: "Are we approaching a time when academic libraries will no longer be necessary?"**

Canada. Of 26 Canadian academic libraries reporting loans of physical items for both 2000-2001 and 2012-2013, the total number of loans dropped from 12,492,134 in 2000-2001 to 6,128,543 in 2012-2013 (down 50.94 percent). Of 21 Canadian academic libraries reporting numbers of visits for both 2000-2001 and 2012-2013, the total number of visits increased from 18,863,135 in 2000-2001 to 32,798,478 in 2012-2013 (up 73.87 percent).

So if students are not going to the academic library to access print collections, why are they going at all?

The Lure of the Academic Library

I believe that students are trekking to academic libraries because academic libraries have been actively reinventing themselves to meet the needs of today's students.

Besides providing some of the last refuges of quiet in a noisy, distraction-filled world, academic libraries have taken such student-friendly steps as relaxing (or eliminating) longstanding prohibitions on food and drink, providing 24/7 study spaces, and generally recreating themselves to be comfortable and friendly, rather than cold and forbidding. As part of this student-centered trend, academic libraries have been aggressively converting square footage from space to house printed books to space for students to study, collaborate, learn and, yes, socialize.

Examples of how forward-leaning academic libraries are attracting students include the following:

•The Grand Valley State University Library's Knowledge Market provides students with peer consultation services for research, writing, public speaking, graphic design, and analyzing quantitative data. Among a number of specialized spaces, the library offers rooms devoted to media preparation, digital collaboration, and presentation practice.

•The libraries of North Carolina State University (NCSU) offer makerspace areas where students get hands-on practice with electronics, 3D printing and scanning, cutting and milling, creating wearables, and connecting objects to the Internet of Things. In addition, NCSU students can visit campus libraries to make use of digital media labs, media production studios, music practice rooms, visualization spaces, and presentation rooms, among other specialized spaces.

•The Ohio State University Library Research Commons offers not only a Writing Center, but also consultation services for copyright, data management plans, funding opportunities, and human subjects research. Specialized spaces in the library include conference and project rooms, digital visualization and brainstorming rooms, and colloquia and classroom spaces.

Reimagining Libraries

By thinking beyond the book, as they reimagine libraries, academic librarians are adding onto, and broadening a long learning tradition, rather than turning their backs on it. In the words of Sam Demas, college librarian emeritus of Carleton College:

For several generations, academic librarians were primarily preoccupied with the role of their library buildings as portals to information, print and later digital. In recent years, we have reawakened to the fact that libraries are fundamentally about people—how they learn, how they use information, and how they participate in the life of a learning community. As a result, we are beginning to design libraries that seek to restore parts of the library's historic role as an institution of learning, culture, and intellectual community.

Any academic library able to live up to so important a role will never outlive its usefulness. ∎

What Happens to Graduates? Contrasting Views of Two Systems

Clifford Adelman

Clifford Adelman is at the Institute for Higher Education Policy, Washington, DC, US. E-mail: cadelman@ihep.org.

An increasingly visible question facing higher education authorities in countries with advanced data tracking capacity is "what happens to our university graduates?" Answers both justify investments in plant, equipment, and faculty, and reassure students facing otherwise uncertain futures. This article looks briefly at two major approaches to addressing that question, both involving large higher education systems. The first is the "Baccalaureate and Beyond" longitudinal studies program in the United States (hereafter B&B). The second is reflected in the final report of a study of the feasibility and potential design of a survey of European university graduates (download at www.euro-graduate.eu). Beyond the potential involvement of 30 countries and 25 languages in Europe, the differences between these approaches are considerable and enlightening.

Before going further, we acknowledge that the US surveys and reports are realities, whereas the European Graduate Survey (hereafter EGS) is a yet-to-be-realized template.

Motivations and Purposes

The US B&B surveys from the National Center for Education Statistics (NCES) were undertaken in 1993 motivated by (a) the limitations of NCES' previous Recent College Graduates cross-sectional surveys, conducted six times between 1974-1975 and 1989-1990 with a universe of students only one year after receipt of a bachelor's or master's degree, and with heavy emphasis on the future supply of teachers; and (b) as a natural extension of national longitudinal studies begun in secondary school and running for 12–14 years, but with limited capacity for tracking postcollege careers and lives. B&B irons out the former and extends the latter.

The EGS feasibility study, funded by the European Commission, sought a design for an account of the professional and personal life of graduates across the continent in ways that would overcome the inconsistencies of national tracking studies (e.g. the German Tracer Studies Co-Operation Project KOAB in Germany; Alma Laurea in Italy). It involved a more statistically convincing number and type of participants than did previous multinational surveys such as REFLEX (Research into Employment and Professional Flexibility), 1998-2000.