

Leading Online Education from Participation to Success

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Abstract. Online education has grown exponentially over the last few decades, churning through a swarm of acronyms, ambiguities and potentialities. Substantial energy has been invested in producing technology, building academic capability, and understanding learners and markets. Though it feels pervasive, online educa-

tion is comparatively new in the scheme of higher education, and key education and business models remain in formation. To spur advancement, this paper argues that as online education matures increasing energy must shift from admissions and provision to ensuring each learner's success. We argue that online education presents new opportunities not just for the mechanics of higher education, but for improving each student's experience and outcomes. Central to such advancement is a clear picture of study success, cogent perspectives for understanding students, effective strategies for analysing and interpreting huge volumes of data, and more evidence-based academic leadership. The paper investigates each of these areas, provoking what institutions could seek to achieve.

Keywords: higher education, online education, quality of education, student's experience, evidence-based academic leadership.

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Introduction

Effectively leading the student experience is essential to the success of higher education [Bryman, 2007]. Such leadership must be responsive to changing contexts and technologies. To that end, this paper outlines a strategy that optimises opportunities presented by the maturation of online education. The strategy is grounded in a picture of what we're seeking to achieve, and the paper begins by advancing a model of study success. From there, it proposes new approaches for understanding and measuring the student experience, and examines the leadership required to spur change.

Online education has grown exponentially over the last few decades, churning through a swarm of acronyms, practices and poten-

tialities. The term ‘online education’ encompasses many things, and in this paper is used to refer to formal education that involves the use of computing technologies, irrespective of where the education takes place. This plays out in varying ways, from fully-online education, myriad hybrid forms of teaching and learning, to education which is wholly online. Online education has been advanced as a key means for re-configuring higher education to supply, and in certain cases create, new forms of demand [Beetham, Sharpe, 2013; Laurillard, 2013]. It conveys intrinsic advantages, offering people an alternative means for interacting with teaching resources, delivering myriad forms of media, and supporting a plethora of communication and decision-making options. Substantial energy has been invested in producing technology, building academic capability, and understanding learners and markets. Though it feels pervasive, online education is comparatively new in the scheme of higher education, and key education and business models remain in formation [Laurillard, 2013].

In essence, this paper argues that as online education matures, energy must shift from quantity to quality—from seeing online education mostly as a means of getting more people into higher education, to focusing instead on ensuring quality. Just like learners, as systems and institutions and technologies develop, focuses should shift from ‘access’ to ‘success’. This means moving beyond behavioural preoccupations with access and retention, to instead explore a broader suite of qualitative considerations regarding success. To achieve this, we advance a strategy that incorporates a broader conceptualisation of student success, new ways of thinking about students, and more expansive forms of evidence.

As noted, much discourse and practice surrounding online education frames the idea of success around input-side considerations such as admission, basic behavioural transactions, and retention. As argued in earlier analyses [Coates, 2006], there are other conceptions that could productively be used, which would lead to a richer understanding of education success. In particular, we assert the value of shifting focus from input-side considerations of access and participation, to outcome-based conceptualisations of success. The concept of study success is complex and has not been subjected to sufficient conceptual analysis, so we offer a model below.

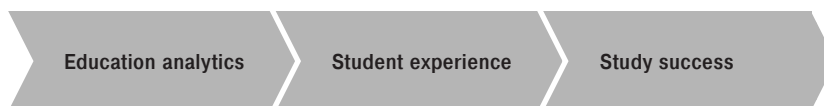
The strategy we present is underpinned by a new means for understanding students. ‘Going to uni’ is no longer what it once was— a seminal life event or stage, a coming of age almost, for the relative few. Massive increases in the demand for higher education have disrupted traditional notions of student identity [Naylor, Baik, James, 2013]. Students today source identity-building experiences from a broad range of study, lifestyle and employment opportunities. Such change drives a need to revisit basic assumptions about who students are, what they seek from higher education, the expectations that shape their experience, and how institutions can best help each student. Most

of the entrenched conceptualisations of students were formed many years ago in far-away places, and rest on crude group-level sociological generalisations [Astin, 1993; Hu, Li, 2011; Kuh, Hu, Vesper, 2000; Stage, 1988; Zhao, Gonyea, Kuh, 2003]. So, we assert the need to instead look through different prisms that give life to the experiences of people. In essence, we need to shift from analysing the experiences of groups, to instead analysing the successes of people. By blending earlier work on students with more contemporary perspectives the paper asserts the need for a suite of new intersectional constructs relating to student identity, expectations, wellbeing, engagement, values, opinions, attitudes, interests, commitments and lifestyles.

Built into our proposed strategy is the realisation that the techniques we use to study students' experiences must also change. In no small part, the now well-institutionalised focus on groups is an artefact of the methodological, analytical and processing limitations of the traditional student survey. Response rates for many surveys are in decline, the explained variance is low, and stakeholders seem increasingly unresponsive to results [Nulty, 2008]. More effective electronic footprints are available such as those that students create through their interactions with courseware, social networking and other systems. With mobile technologies, people analytics and other techniques made possible by rapid advances in technology, we now have the tools and data required to conduct more sophisticated and individualised analyses [Higher Education Commission, 2016]. Hence we propose a sustainable shift in focus from student surveys towards education analytics.

Hence this paper sets forth a major new line of work examining the success of higher education students. Who are the individuals entering higher education, and how can institutions better manage their experiences as they progress through study? How can we move beyond the suite of popular but limiting constructs on retention and experience, to look instead in more dynamic ways at who people are and what they need to succeed? How can we get information on each and every student, not just the fifth who respond to surveys, and how can we explain more than a fraction of the variation in people's experiences? How can we help institutions and academics change? These are deep and broad yet basic questions which require us to better understand how an increasing number and range of individuals approach higher education, students' identities and expectations, and how institutions can manage and enhance people's experiences.

But why complicate matters with this integrated analysis? In summary there is a pressing need for joined-up leadership, education, and institutional research: higher education management needs to become more evidence-based; work on the student experience needs to move beyond reliance on survey rituals that reify mythical sociodemographic groups; and institutional research (including various emerging forms of 'big data analytics') needs to become less a-theoreti-

Figure 1: **Strategy logic**

cal [Naylor, Coates, Kelly, 2015]. Figure 1 depicts the design space in which the paper is positioned. Finding a sweet spot which unites practical, theoretical and technical angles carries valuable potential for maturing the evidence-based leadership of higher education. Making this step requires the creation and adoption of a ‘new ethnology’ for higher education.

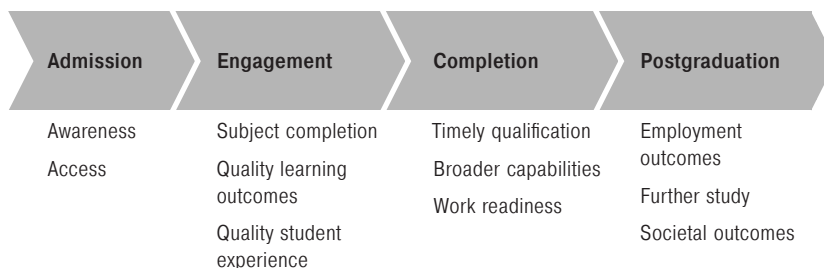
This paper conveys a strategy to provoke a modest shift in this broad direction. Substantively, we investigate who students are and what they expect from higher education—an inquiry that goes beyond stereotypes, generalities and dated assumptions about demography and contexts. Technically, we explore sustainable new approaches for measuring and reporting on these new constructs and profiles. We progress the field of education analytics and help institutions leverage under-utilised existing data for quality enhancement. Practically, we shed new light on how institutional leaders and managers could use new insights and data sources to monitor and improve the student experience. Overall, our analysis seeks to jump beyond dated myths and rituals to instead exploit the opportunities offered by the maturation of online education.

Framing student success

As higher education has grown and diversified, so too has the challenge of helping each learner succeed. The reasons for participation have proliferated, as have the programs, environments and post-graduate pathways. This changed context makes it more important than ever to develop practice-relevant conceptualisations about what is sought through higher education. While clearly not a task that can be approached or accomplished in any easy or conclusive way, it is likely that a basic frame—even one which is highly contestable—carries genuine potential to inform future progress. The key question guiding this task is: ‘What does higher education want for students?’ If the answer—presumably—is ‘success’, then what is a useful way of conceptualising this phenomenon? In the remainder of this section we advance a normative model of success, articulated as a basis for subsequent investigation of student identity, institutional research to inform leadership.

The concept of study success is complex and has not been subjected to widespread conceptual analysis. In this section, we model different facets of study success. Figure 2 provides an overview of the proposed model. The model outlines several thresholds of increasing

Figure 2: **Model of study success**



success. While it focuses primarily on academic matters, it does so in a contemporary way which recognises the broad nature of a person’s higher education engagement. The following description sets out the normative architecture of the model. Subsequent analysis explores how these ideas may play out in context, and be underpinned by data.

Admission Simply becoming aware of higher education is an important facet of success, regardless of a person’s ultimate attendance [Behrendt, Larkin, Griew, Kelly, 2012]. While substantial work is unfolding to better link higher education with precursor opportunities—not least, or only, through better alignments between qualifications, more generalizable credit structures, and more transparent and granular learning outcomes—still the fraught nature of life, career and cross-sectoral transitions often renders incomprehensible even to industry experts entry into the foreign world of higher education.

For many potential students, the first measure of success in higher education is gaining access to an institution or course. A number of factors, including academic preparation, aspirations for further study, and ability to actually enrol and attend higher education, contribute to whether students are successful in terms of their access. To date, most research into access has focused on particular segments of the student population, such as people from structurally defined disadvantaged groups or people entering selective courses, but it is important to recognise that most students would feel a sense of achievement in gaining access to higher education [Behrendt et al., 2012; Gidley, Hampson, Wheeler, Bereded-Samuel, 2010; Godden, 2007; Naylor, Baik, James, 2015].

Engagement Getting involved in higher education is of course just the first of many possible successes possible in higher education. Once engaged in study, a further basic sense of success involves simply passing the units in which a person enrolls. This, of course, implies a lowest common denominator conceptualisation of success (‘at least 50 per cent’), which may be problematic in situations especially involving professional degrees where a particular standard of performance is

expected and yet a student has achieved a bare minimal pass. It also begs the question of whether '50 per cent' at one institution is the same as '50 per cent' at another—almost certainly not the case given the almost complete lack of cross-institutional calibration mechanisms [Coates, 2014a]. Increasingly these are policy rather than technical intricacies, and hint at the complexities surrounding even this basic threshold of success.

Defining success as simply passing subjects sets a very low standard for academic success, and other markers must be prescribed. Given that subjects are graded at more than just a pass/fail basis suggests that we recognise that there are different levels of quality, and recent major efforts have been made to advance more encompassing and scientific notions of such success [Ibid.]. A further definition might be achieving or exceeding an individual's own academic expectations. This is a more student-centred definition that emphasizes the oft-quoted transformative nature of higher education. Here, success is defined as students exceeding personal expectations of their own potential, and touches on the transformational possibilities of higher education.

Study success may also be defined as relating to particular attributes of the student experience. Here, a successful student is one who is engaged in an appropriate way with her or his higher education experience, either with academic experiences or broader life outside the classroom [Zepke, Leach, 2010]. This type of success could apply to individual subjects or semesters, or as a reflection on a broader experience overall. For that reason, it seems appropriate to separate it from the conceptions of success that apply clearly during study, or at completion.

Completion Qualification completion is an obviously important facet of success. Discussions of gross completions as well as retention swirl around this topic. Seemingly simple, completion is not without complexity given many people engage in higher education without seeking a qualification—especially with the increased emphasis on lifelong learning and the move away from traditional, full-time enrolment. There are also questions about whether degree completion should be bound by time constraints, which gets messy given notions of transfer and articulation.

Successful graduation is more than a technical affair, and also increasingly requires the acquisition of a broader set of graduate capabilities. There would appear to be a core set of such capabilities—such as social, interpersonal, critical and leadership skills—along with capabilities nuanced by particular institutional and professional contexts. As well as developing generic skills, a vocational view of higher education might define success as developing specific skills required to practice the role or career in which a student has trained. The tension, particularly in professional degrees, between teaching discipline con-

tent as opposed to work-related skills, demonstrates that this is not quite the same as simply completing a qualification.

Postgraduation Clearly, a host of outcomes flow from completion of a qualification. Gaining employment is particularly important [Coates, 2014b]. But is being employed enough, or is being employed in a career that substantively uses the skills developed in higher education enough? Is someone with an engineering degree who doesn't work as an engineer successful? And does the extent of employment matter? Over what period of months or years should employment outcomes be reviewed [Coates, Edwards, 2010].

As well as vocational and broader social outcomes, study success in higher education often flows into further higher education. Someone completing an associate degree may move onto a bachelor's, or shift from bachelor's to master's, or progress from master's to doctoral, then research or teaching roles at varying points along the way. In this way academic success carries the potential to spur further academic success.

Looking more broadly, a societal view of success looks towards the contribution made by higher education participants towards a more productive, well-informed, aware or just society. The emphasis on public engagement, as well as community access programs and the like, emphasises the importance of this role for higher education. Whether or not students pass their subjects, or are satisfied with their experiences, or complete their degrees, is not as important through this lens as whether they are able to contribute more fully to society because of their study. Again, this is the broad goal of traditional liberal arts education.

While traditionally framing the student life-cycle from entry to exit, the success model extends the temporal and conceptual dimensions of higher education to consider deeper and broader cultural dynamics influencing notions of student success. As new ways of delivering and experiencing higher education evolve, the success model provides a framework that takes into account the diversity of student motivations, experiences and outcomes relative to a normative understanding of success.

Recreating the student experience
Embracing complexity Clearly, succeeding in higher education means different things to different people. While the preceding conceptualisation of success is deliberately decontextualised to the point of theoretical generality, to be of any use it needs to be made real in particular individual contexts. In establishing settings for the future of online education it is important to improve the approach to identifying people.

This section asserts the need to embrace substantially more complexity than has hitherto been the case. In essence, we assert the need to shift from viewing students through the lens of mythical so-

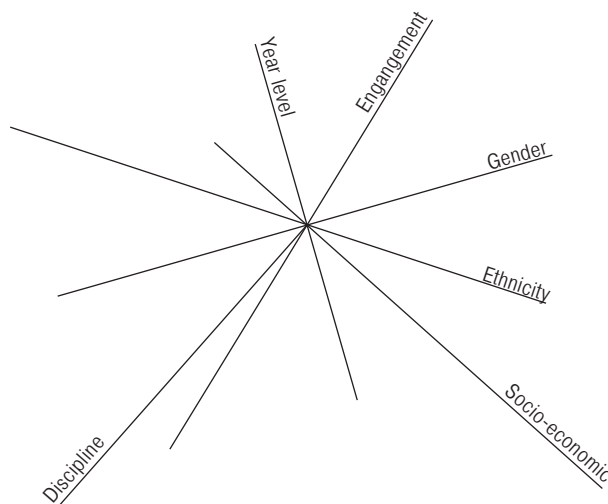
ciological groups, to instead looking through prisms that give life to each person. As the following discussion highlights, this is not just a linguistic slip, but a fundamentally different way of conceptualising the identity of those people who study in higher education. We believe that this shift—broadly, from treating each student as a group member, to treating each student as a person—will likely require much work, particularly in developing robust education analytics, but will ultimately be productive.

From groups to individuals We contended that group-level classifications provide insufficient insight into disadvantage, due primarily to their lack of resolution and their static nature. Research on educational equity has provided frameworks to describe several aspects of student identity, such as ethnicity [Cross, 1991; Ferdman, Gallegos, 2001; Helms, 1995; Kim, 2001], sex and gender [Bem, 1981; Carter, 2000], and sexual orientation [Cass, 1979; D'Augelli, 1994]. These frameworks are inadequate when trying to explain the complexity of student identity in which personal characteristics (socioeconomic status, gender, race, sexual orientation, plus a host of highly individual factors) intersect with features of the collegiate environment (institutional type, academic program, extra-curricular activities) [Braxton, 2009].

An alternative approach is to look beyond aggregate groupings for an approach that more deeply unpacks the extent and nuances of people's identities. A key step here is to shift from dissolving people's identities into broad, unchanging classifications, to exploiting the particularity and dynamism that patterns each person's experience [Jones, McEwan, 2000]. A first move in this direction involves the development of evidence-based typologies based on the needs, behaviours, or cognitive or motivational factors. Examples include those based on Clark and Trow's seminal 1966 study, or Astin's 1993 typology. Many further student typologies in higher education have been developed in the United States (for a summary see: [Coates, 2007]), where there is more of a tradition of this type of research. While they would need revision before being generalised to other contexts, most are based on analyses of many thousands of students and similar categories have been identified over time and by multiple researchers which highlights the integrity.

Towards hyper-intersectionality We invoke the idea of 'intersectionality' to extend this approach. Dill and Zambrana [2009. P. 1] define intersectionality as "an innovative and emerging field of study that provides a critical analytic lens to interrogate racial, ethnic, class, physical ability, age, sexuality, and gender disparities and to contest existing ways of looking at these structures of inequality". Research in intersectionality presents a way in which the connection between aspects of identity are influenced by context [Torres, Jones, Renn, 2009]. It is well proven that disadvantage can be compounded rather than additive. Examples in-

Figure 3: **Example hyper-intersectionality**

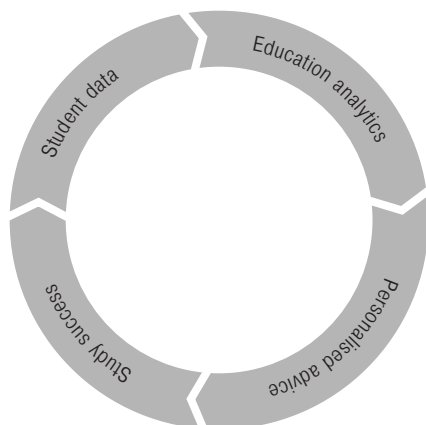


clude interactions between Indigeneity and socioeconomic or remote backgrounds, or interactions between field of study, gender and sociodemographic factors and attrition [Gale, Tranter, 2011]. Despite such insights, research in this area has been limited to mostly binary understandings of intersectionality, such as ethnicity and international status [Malcolm, Mendoza, 2014], gender and race [Linder, Rodriguez, 2012], or ethnicity and religion [Rockenbach, Mayhew, Bowman, 2015]. We assert the strategic value of extending the work of student typologies further, both conceptually and technically, to identify people as a series of intersecting vectors.

The concept of ‘hyper-intersectionality’ forwarded in this paper is the idea of using intersecting vectors of quantitative metrics to account for differences in the numerous identity criteria listed above. Using algorithms to connect student admissions data, education analytics can predict student performance in desirable student outcomes such as grades, persistence, and retention. The appeal of this process is that, unlike the a-theoretical analysis of click-stream data, for example, the interpretations of such findings can be linked with theoretical understandings of student development. However, neither basic nor applied research has yet produced the resources to identify these vectors and meaningful intersections between them [Abes, 2009]. New typologies predicated on data beyond demographics need to be created.

Of course, a required step is to determine how best to identify people. It falls to empirical institutional research to determine what factors are needed to sufficiently identify students. Figure 3 starts to build a picture of how this might be done, showing a range of sample

Figure 4: **Data-driven approach to student success**



personal, environmental and situational factors. As in any general multivariate segmentation activity it would likely require dozens of factors to profile students sufficiently to create managerially and educationally useful profiles. Institutionalised reporting of such profiles would help understand who students are and how to help them succeed.

**Creating
education
analytics
Evidence for
success**

Conceptual consensus acknowledging the need to understand the diversity of today's students is insufficient to advance development. Effective change requires shifts in institutional culture and practice. We suggest that such change should be evidence-based, underpinned by data that identifies who students are and what they need from institutions to succeed. Figure 4 visualises this data-driven shift towards student success.

As technology enabled education stabilises to become an integrated element of institutional and student life, new kinds of data are being spawned that harbour the potential to personalise the education experience. Online education systems that are used to manage the student experience from admission through to graduation and beyond, have the potential to supply information for better understanding students and helping them succeed [Jackson, 2012; Higher Education Commission, 2016]. While there may be an abundance of information on students, however, data siloing—the lack of interoperability between systems and the non-collection of data—prevents the effective use of integrated information about the student experience, hindering progress. Hence multifaceted change is needed to facilitate the collection and analysis of experiential student artefacts for the purpose of understanding students and promoting success. Broadly, we contend, this involves a shift away from the conventional methods used

to study the student experience into new territory defined in terms of various forms of 'analytics'.

Higher education analytics

The empirical foundations of the strategy proposed in this paper rest on the notion of 'education analytics'. Education analytics, most broadly, is understood as the use of data to explain and predict, allowing action on complex education issues. It is helpful to position such analytics in terms of emerging research and practice.

The use of analytics in higher education is considered to have evolved from 'data-driven decision making' that defined 'business intelligence' during the 1980s and 1990s [Picciano, 2012]. With origins of practice in commerce for business management, the use of analytics in pedagogical environments has taken longer to develop [Goldstein, Katz, 2005] and is currently in an early-adoption phase. The use of analytics in higher education has developed rapidly over the last five years with the proliferation of digital systems, platforms and devices. The field of 'learning analytics' has taken shape, which in a formative conceptualisation is defined by Siemens and Gašević [SOLAR, 2011] as "activities concerned with the measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs". The use of analytics for institutional purposes is referred to as 'academic analytics' [Long, Siemens, 2013]. As well, 'social learning analytics' seek to provide information about the construction of knowledge by groups of learners [Buckingham-Shum, Ferguson, 2012].

Education analytics rest on the generation and storage of vast amounts of data, which in turn rests on the incorporation of large-scale systems into core facets of higher education. Such systems are now integrated in operations such as admissions, enrolment, fees and loans, curriculum, assessment, resources, student support, library, survey instruments, applications, general and official communication. Data from such official systems provides the foundations for education analytics. This includes demographic and personal information submitted by the student for enrolment, and academic information generated by students and staff. But limitations on the completeness and connectivity of data sources within and across institutions restricts use [Long, Siemens, 2013]. In addition, teachers and students use a vast range of non-institutional systems to support learning and broader interactions, and data from such platforms can be difficult to source or access [West, 2014].

We assert the need for greater strategic use of education analytics at a formative stage of the field's development. While international scholarship exploring the theory and practice of analytics in higher education is surging [Siemens, Dawson, Lynch, 2013], the use of analytics in applied institutional and national settings remains muted. A study of institutional data use in the United States, for instance, found

that most data collected by institutions is for credentialing or reporting requirements rather than addressing strategic questions, and that much of the data collected are not used at all [Bichsel, 2012]. While the application of analytics for strategic objectives is developing, current practices are often fragmented, opportunistic and theoretically limited. Recent approaches towards the collection of more nuanced student information and the integration of greater sources of information promise to provide greater insight into student identities, including learning behaviours, motivations and needs. The potential for the use of analytics to retrieve student data not just from official sources but from platforms and applications not technically supported by institutions reflects further opportunities.

From retention to success

To date the primary use of analytics has focused on student retention. Examples of analytics designed for this purpose have been executed by different institutions through a variety of methods, and supplemented by a range of interventions both digital and physical. One of the most cited examples is Course Signals developed at Purdue University in the United States [Arnold, Pistilli, 2012]. The analytics system uses data from the learning management system in combination with demographic and other information mined across university sources to gather prior academic history (including secondary school) and academic preparedness. The use of analytics largely for retention purposes reflects a traditional 'top-down' approach to student support by harnessing information that identifies a problem for the teacher or institution to resolve, rather than advancing a more evidenced-based and success-oriented understanding of how students learn and what motivates them to succeed.

Focussing on the use of data for retention has in large part ignored the potential for personalised and adaptive systems to enhance the experience of all students in a much broader range of ways. Education analytics needs to mature to help institutions ensure each student's success. Broadening the scope of analytics using more diversified data sources has the potential to inform a greater range of purposes suited to individual students, such as scholarship eligibility, international exchanges, internships, alternative course offerings, extra-curricular opportunities and employment. Creating more sophisticated analytics carries the potential to not only steer student success along the pathways defined above, but to also influence the skills and knowledge sets developed in higher education [Gibson, Kitto, Willis, 2014]. As a young field of practice and research, the potential use for analytics has yet to be considered in full. However, a recent report from the United Kingdom's Higher Education Commission [2016] asserts that the scope of analytics for broader service to students to improve their whole experience, personalise information and empower them is fast becoming a priority for institutions despite low levels of implementation in learning analytics [Newland, Martin, Ringan, 2015].

By way of example, rather than implement discrete student surveys and administrative data collections, institutions could map data requirements against the model of success (Figure 2) and salient facets of student identity (Figure 3). Data could include previously collected but under-analysed and non-integrated information in existing systems and also incorporate new types of behavioural or cognitive information that has hitherto been out of scope for institutional data collection, analysis and reporting. The derivation of education analytics could then underpin personalised advice to relevant stakeholders—students, teachers and support personnel—with a view to providing the individually focused support that has been shown [Coates, 2014b] to help each student succeed.

**Enhanced
academic
leadership**

We have argued that as each student's use of learning technologies increases and diversifies, institutions have the opportunity to understand the changing identities of students, and to steer each towards success. Students invest heavily in higher education to realise a multitude of outcomes. No longer passive actors within higher education settings, students today are diverse learners in an increasingly diverse and evolving environment resistant to traditional descriptors based on broad demographic categories. The advent of education analytics promises to provide personalised, adaptive and real-time learning environments for each student. Yet education analytics alone are insufficient to advance higher education. Multidimensional leadership is required that joins-up education analytics with a more nuanced notion of who students are and how they experience higher education to enhance study success.

Indeed, effective academic leadership lies at the heart of any strategic change in this area. Such leadership must come from a variety of sources—people in formal leadership roles, teaching academics, support and advisory personnel, the environments people establish, and of course learners themselves. It is important to keep squarely in mind in any such analysis that the nature of academic work is changing [Coates, Goedegebuure, 2012], and new hybrid functions and hence roles are emerging, not least in the field of analytics. Furthermore, higher education is an essentially co-produced activity, and even the best institutions in the world will not inspire success unless students in particular and also a range of other agents engage.

What, then, are the most effective means for building capacity and impelling the strategy charted in this paper? First, there is an urgent need to ensure that online platforms support a range of education and management functions. These tools are not context neutral, and at a minimum we contend that they must furnish metrics to advance the elements of success outlined above. Second, there is a need for case study research that demonstrates the value to institutions and individuals of adopting a broader evidence-based approach to online edu-

cation. Clearly, there is a need to motivate institutional leaders to shift energy beyond preoccupation on access and retention issues. Third, as online education further expands it is necessary to implement various forms of professional development to build the capabilities and competencies linked with success.

Though difficult to generalise across institutions and people, higher education has been slow to adopt evidence-based forms of practice. There would appear to be various reasons for this, not least the political economy of the sector, history and culture, the rapid growth of institutions and analytics, and the fact that much that matters in higher education can be very difficult or complex to measure. Nonetheless, there is a growing need for more evidence-based change. We affirm the need for academics rather than governmental or commercial stakeholders to advance the strategy outlined in this paper.

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