

'Problematizing the 'Career Academic' in UK Construction and Engineering Education: does the system want what the system gets?'

Nick Pilcher, Alan Forster, Stuart Tennant, Mike Murray and Nigel Craig

Nick Pilcher, School of Marketing, Tourism and Languages, Edinburgh Napier University, Edinburgh, UK.

Alan M. Forster, School of Energy, Geoscience, Infrastructure and Society, Heriot-Watt University, Edinburgh, UK.

Stuart Tennant, Department of Civil Engineering, University of the West of Scotland, Paisley, UK.

Mike Murray, Department of Civil & Environmental Engineering, University of Strathclyde, Glasgow, UK.

Nigel Craig, School of Engineering & Built Environment, Glasgow Caledonian University, Glasgow, UK.

Abstract

'Career Academics' are principally research-led, entering academia with limited or no industrial or practical experience. UK Higher Education Institutions (HEIs) welcome them for their potential to attain research grant funding and publish world-leading journal papers, ultimately enhancing institutional reputation. This polemical paper problematizes the Career Academic around three areas: their institutional appeal; their impact on the student experience, team dynamics and broader academic functions and; current strategic policy to employ them. We also argue recent UK government teaching-focused initiatives will not address needs to employ practical academics, or 'Pracademics' in predominantly vocational Construction and Engineering Education. We generate questions for policy makers, institutions, and those implementing strategy. We argue research is key, but partial rebalancing will achieve a diverse academic skill base to achieve contextualised construction and engineering education. In wider European contexts, the paper resonates with issues of academic 'drift' and provides reflection for others on the UK context.

~~Within construction and engineering education, 'Career Academics' are principally research-led, and enter academia with limited or no industrial experience. Understandably, following UK Higher Education Igovernment policy, despite some institutions (HEI's) being teaching-led, Career Academics are welcomed for their potential to attain research grant funding and~~

~~publish world leading journal papers that ultimately enhance institutional reputation. This polemical paper problematizes the Career Academic around three inter-related areas: their institutional appeal; their impact on the student experience, team dynamics and broader academic functions and; current strategic policy to employ them following government strategy. We also argue recent UK government teaching focused initiatives will not address the need to employ practical academics, or ‘Pracademics’, albeit in a predominantly vocational discipline, practical subject area such as Construction and Engineering Education. We generate questions for policy makers, institutions, and those who implement strategy. We argue research is key, but a partial rebalance will achieve a diverse academic skill base to achieve contextualised construction and engineering education.~~

Key words: REF; Construction and Engineering Education; Recruitment policy; career academic; professional industrial experience, TEF

Introduction: current contexts and concerns

In this article, we understand ‘system’ as the UK Higher Education system in its education practices and policies from central government, their implementation by management and Human Resources (HR), and their influence on student experience and teaching team dynamics. We understand ‘Career Academic’ as someone pursuing academia as a Career, seeking promotion and professional longevity via administrative, teaching, but primarily through high quality research publications, grant funding and evidence of impact (Barr, 2008, Tennant et al., 2015). These academics have little or no meaningful industrial experience related to construction and engineering. By industrial experience, we mean working professionally and practising in either public, private or the charitable sector. -in the area, whether this be in a private sector firm (commonly the case in the UK) or for a public sector body such as in the railways or city planning (in other European countries). For UK institutions, Career Academics are highly appealing. Their increased prevalence is a product of circumstance in response to the UK Research Assessment Exercise (RAE) / Research Excellence Framework (REF) and accompanying performance metrics, and -they are **is better best** placed to maximize research income in the UK’s now heavily enterprise and consumerism focused HE sector (Regan, 2012).

In the United States, even without a government REF, such individuals can **better gain/enhance their** tenure, and associated salary and employment benefits (Sykes, 1988; Lewis,

2007; Goldberg and Somerville, 2014). Worldwide, Career Academics appeal given their~~They~~ have the potential and expectation to produce high quality research publications, attain research council grant funding and supervise PhD students. Yet, as is noted in a UK context, rarely are they incentivised to gain industrial experience, or have ~~the opportunities~~ or willingness to do so, instead dedicating themselves to research (Porter, 1991, Buckley et al., 2015)~~-to develop their equivalent of the REF submission portfolio.~~ Academics with little industrial experience are also not individuals with whom industry feel they can work (Dowling, 2015), perhaps due partly to ~~the lacking of~~ common language or ~~failure~~ to readily identify with practice. Previously, industrial secondment schemes ~~have~~ existed to give “first-hand experience of an industrial environment and knowledge of current industry practices.....improv[ing] the quality of industrial relevance of their teaching” (Royal Academy of Engineering, 2015). Nevertheless, ~~how these schemes are measured regarding their teaching impact is remains unclear.~~ Arguably, when Career Academics do undertake such schemes, they may arguably be attempting to contextualise their own research rather than acquire knowledge for teaching.

For some time, in the UK, it has been argued ~~that~~ construction and engineering educators increasingly lack, but need; industrial experience (Porter, 1991, Graham, 2015). Indeed, the Royal Academy of Engineering (2014, p.21) highlight that “HE appointments are often driven by a need to improve the research profile of an institution and many academics are recruited on their research track record.” Yet, construction and engineering is a broad field with fragmentation of specialist areas of practice. This is also true for construction and engineering professionals ~~with that have~~ their own specific specialist functions and areas of practice. Educational support reflects these specialist areas and correspondingly requires input from those with industry experience. Yet, how construction and engineering education is delivered in UK HE has changed.

In the 18th and 19th centuries, site based artisansbuilders learnt experientially on a daily basis (Kealey, 2008). For some, night-classes, typically at Advanced Colleges of Technology, supplemented practical knowledge with theory (Kealey, 2008). Educationally, this was called the dual voluntary system (Snell, 1996), where experiential learning constituted the primary, or first order, educational focus (Snell, 1996). Conversely, today’s primary educational focus in the UK is theoretical, albeit delivered consistent with professional bodies’ competency based Chartership requirements¹. Some students follow internships, but most supplement this post-

¹ amongst others; Royal Institution of Chartered Surveyors (RICS), Chartered Institute Of Building (CIOB), Chartered Association of Business Engineers (CABE), Chartered Institute of Building Service Engineers (CIBSE), and Institution of Civil Engineers (ICE]

graduation by experiential learning via construction and engineering companies' structured training agreements or work-based learning programmes. For other students, during their undergraduate education otherwise, it can be placements, sponsorship, part-time or sandwich courses, ~~and even~~ distance and online delivery provide such experience.

Historically, for the student experience, learners initially received 'first' hand industry practice, and more recently 'second' hand accounts through their tutors' storytelling. Today, with current emphasis on recruiting Career Academics, ~~the UK HE sector's ability to provide even this 'second' hand account is challenged. M~~ many UK students ~~now~~ only receive a 'third hand' accounts from lecturers with no industrial experience albeit who may ~~draw upon~~ have undertaken Continuing Professional Development (CPD) vis à vis consulting industry literature magazines and papers or through visits to visiting construction and engineering projectwork sites, ~~to help contextualise delivery.~~

In the ~~UK in the 1980s (Horne, 1983) initial 1980s, voices began to note~~ concerns ~~in the 1980s (Horne, 1983)~~ that ~~HEIs university academic schools~~ should require lecturers to have practical experience (Graham, 2015). ~~In the 1990s, concerns~~ grew. ~~By in the 1990s, that~~ construction and engineering academics with limited or no practical experience were becoming prevalent, with adverse implications for teaching (Barr, 2008). Recently, such arguments have ~~increased become increasingly frequent and prominent~~ (Barr, 2008; Alplay and Jones, 2012; Graham, 2012; Westacott, 2013; Tennant et al., 2015), ~~with and the declining decreasing~~ numbers of academics with relevant industrial ~~or practical~~ experience (Royal Academy of Engineering, 2014) ~~is~~ now a great concern (Arlett et al., 2010). It is one of many "faculty shortcomings", with ~~a resultant~~ significant "variation in teaching skills and student understanding" (Alplay and Jones, 2012, p.615). Today, many new UK appointments have "little or no practical experience" (Clarke, 2012) due to "increased pressure on research output" (Graham, 2012, p.16; cf. Collins and Davies, 2009; Bekhrandnia, 2016). Furthermore, in teaching team contexts, inexperience ~~in an area~~ can create inequalities in teaching distribution through a lack of expertise, ~~with and~~ students ~~can be~~ adversely affected (Vinney, 2016). This is especially pronounced given drives for greater multi-disciplinary approaches to teaching, i.e. design projects / interdisciplinary working ~~that is~~ favoured by professional bodies ~~as it~~ aims ings to simulate real life. Ironically, these attempts ~~made~~ to simulate real life are often staged by players with no experience of real life site-based construction and engineering itself. Career Academics arguably struggle to orient and meaningfully engage with holistic project content that typifies multi-disciplinary work. Subsequently this can impact on team dynamics and perceptions of course strength if Career Academics lack relevant experience to deliver existing

modular content in accordance with professional accrediting bodies' requirements. Moreover, a greater likelihood of syllabus and staff drift (Kyvik, 2007) exists as Career academics regress to favour educational components they are comfortable with. This ~~separates–disconnects~~ disciplinary knowledge from employability and life-long learning attributes that are best introduced into the curriculum in parallel, through contextually rich case studies and problem-based learning (Kamp, 2014).

In this polemical position paper, we complement the literature by providing an in-depth problematization of the Career Academic ~~that~~ considerings–the benefits and shortcomings of these trends in UK construction and engineering education. To inform our paper, the research approach adopted largely relies upon an extensive literature review and considered analysis ~~to provide what is essentially a position paper~~. The paper is not, we stress, a critical exploration of individuals working in the UK HE system, nor a critique of research. Research is, ultimately, a key goal of universities ~~that~~ drivings knowledge forward. Instead, the paper discusses the concept of the Career Academic in construction and engineering ~~Career–Academic~~ within current UKHE system. It ~~does so–problematizes the Career Academic~~ around three inter-related areas: their institutional appeal; their impact on the student experience, team dynamics and broader academic functions and; current strategic policy to employ them in response to government strategy. We generate questions for policy makers, institutions, and those entrusted with implementating on–of strategy. Such questions have relevance for the UK but also, we argue, for a wider European and Global context given their focus on issues associated with ~~a~~ research–focus on educational strategy, and the importance of academic drift to the field (e.g. Denmark (Christenson and Erno-Kjohlhede, 2011)) and more widely (e.g. Neave, 1979).

One: the appeal of the Career Academic to individual institutions

For ~~individual institutions~~ HEI's in the UK, ~~Ce~~areer ~~A~~academics are appealing. ~~An Early Career Researcher (ECR)~~ They ~~A Career Academic~~ bears the promise (or if experienced, manifest evidence) of research funding in line with current UK government HE funding policies (Willetts, 2010). For ~~HEIs institutions to negate research activity closes significant institutional income sources. Further, benefits of an institutional~~ research portfolio benefits extend beyond funding; research success aids prestige, status and league rankings, which lucrative international students often base institutional choices on (Graham, 2015). Understandably therefore, certain elements of strategic decision makers principal focus for

appointment, as is evident from ~~surveying/reviewing many recent~~ job advertisements, is ‘essential: PhD, significant research publications and research grant income’, and ‘desirable: relevant and extensive industrial experience, and chartered status’. Indeed, Career Academics have many qualities industry trained practitioners lack.

Qualities of career academics for individual institutions

Career Academics manifestly have PhD education attributes of specialised knowledge, critical thinking, and in-depth evaluation skills for complex interconnected problems (Greenfield, 1996; Phillips & Pugh, 2010). They understand (and probably accept) the shared beliefs (Harari, 2014) underpinning research ~~activity, even though these are framed by UK government led REF policy.~~ A PhD is a ~~research surrogate~~ apprenticeship (Park, 2005) ~~in the mechanics of~~ research mechanics, and methods ~~used~~ (Knight and Ruddock, 2008). Research-oriented minds arguably explain complex subject matter at fundamental levels (Demski and Zimmerman, 2000). Indeed, Greenfield (1996:3) suggests research is “an art aided by skills of inquiry, experimental design, data collection, measurement and analysis...~~by~~ interpretation, and...~~by~~ presentation”. Such skills support ~~the~~ attainment of transformative research funding council grants and help individuals gain understanding of ~~how~~ tacit and expressed ‘networks’ ~~function~~ in specialist subject areas.

Secondly, PhDs are ~~undoubtedly~~ symbols of strength, value and academic authority in an education service industry. They ~~have~~ is significant employment capital ~~in PhDs~~ given their symbolism of the highest academic attainment ~~at the highest level~~. Although ~~PhDs such a route~~ may not prepare academics pedagogically, ~~the necessity for new UK staff- must to~~ complete a Postgraduate Certificate PGCert in Academic Practice (hereafter PGCert) arguably enhances pedagogical knowledge and helps understand student learning.

Thirdly, productive Career Academics can be highly motivated given ~~that many advantages of having an academic career.~~ Academia has traditionally carried a certain permanence compared to industry ~~employment, especially in project-based industries~~ (Kalleberg, 2000), and has more flexible working conditions. Also, social prestige in academia, “particularly the role of determining the life chances of others” (Hansley and Trow 1971, p.204) can be perceived greater than in industry, ~~operating in the knowledge economy and the educator status, as opposed to construction and engineering jobs. Furthermore, academia offers more opportunity for flexible working and better conditions.~~ Classic management theory states workers work-respond to rewards (Griffin, 2013), and academia offers financial gain and rewards through senior promotions, whether, invariably, by research (Graham, 2015), or

teaching routes (Macfarlane, 2011). ~~For institutions, Arguably the paradigm and thought process of UK research/Career Academic recruitment ostensibly aims to help~~ delivers good research and increases institutional ranking ~~based on these metrics~~ (Graham, 2015, Guardian 2015, Complete, 2015). In turn, students choose institutions by these metrics.

~~It is thus not too unrealistic to assume that~~ Thus, institutions arguably recruit Career Academics in line with the principal assertion ~~we~~ represented in Figure ~~1~~ here 1, although we note for purposes of clarity and to support the principal argument being made here, other impacting factors and assumptions have been omitted.:

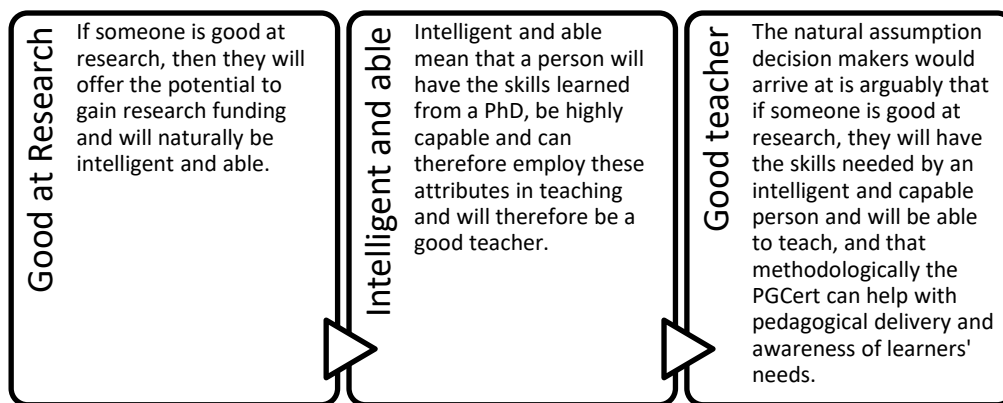


Figure 1: Institution assumptions of Career Academic performance.

Notional and typifying features of the industrially experienced lecturers

Yet, despite these assumptions, and ~~the~~ advantages Career Academics offer, those with industry experience, practical academics, or ‘Pracademics’ (see Andrew et al., 2014 p.76 for a reference to pracademics in nursing education) also offer many advantages. Professional chartership (RICS, 2015; CIOB, 2015; ICE, 2015) signifies many competencies, and although universities have many ~~chartered professionally qualifieds~~ staff, ~~very~~ few have any lengthy exposure to industrial experience and have often chartered via academic routes. The situation is not binary, and ~~some there are~~ staff working in UK universities ~~havewith~~ significant industrial experience. Yet, such staff were ostensibly employed before UKHE recruitment became REF focused. Whether such staff would attain employment today when compared to the Career Academic is highly questionable. This has, we argue, an adverse impact upon construction and

engineering education given the ability of such staff to bridge ~~the gap between~~ theory and practice.

Firstly, those with lengthy industry experience have the learnt knowledge grounded within professional employment contexts that acculturates individuals to workplace norms and practices (Hasluck and Hogarth, 2010; Gainsburg, 2015). Industry experience ~~This~~ provides tacit knowledge ~~from industry working experience~~, of manual and cognitive dexterity components, trade socialisation (Snell, 1996), and managing random and unexpected events (cf. Gainsburg, 2015). Such aspects can only be achieved through experiencing (cf. Kolb, 2014) deep learnt industry practice and gaining industrial chartership. Even though industry experience may become outdated, (notably in technology advancement, and changing legal and contractual aspects), ~~the issue is more about~~ the ability to operationalize tacit knowledge into context for students ~~than explicit specialist knowledge is key~~ (Gainsburg, 2015).

Secondly, extended industry ~~or practical~~ experience of regular interaction with industry personnel site operatives at various levels helps develop interdisciplinary site management communication, leadership, and negotiation skills (Gainsburg, 2015). Such skills are hard to master given potentially confrontational dialogues when work has not met expectations (cf. Schein, 1970). Indeed, accessing ~~the~~ industry in ~~an~~ apprentice or professional capacity is often associated with ~~a~~ shifts in student learning paradigms, ~~something. Whilst both~~ exciting, ~~and~~ stressful, ~~and it is~~ undoubtedly a formative, if not transformative ~~and unique~~ experience.

In ~~a~~ HE contexts, such experience and knowledge is highly beneficial. Firstly, regarding pedagogy, ~~although~~ a PG Cert helps assists with course design and delivery, ~~and that institutions are said to~~ 'value skills and achievements in relation to education and pedagogy alongside research outputs' (Fung et al., 2017, p.10). ~~However, it-it~~ cannot give ~~thesuch~~ experience ~~forthat helps~~ lecturers to contextualize their teaching (Lamb et al., 2010, Gainsburg, 2015, *contra* UKgov, 2015, Johnson, 2015). Industry experience gives lecturers anecdotes and narratives to share with students about workplace realities (Broome and Peirce, 1997; Gainsburg, 2015), and garners them respect from students (Christensen and Erno-Kjohede, 2011). Such lecturers can act as 'role models' and social conduits to the realities of practice, softening the transitional 'shock' ~~from student~~ to working life and are aware of the ethics of industrial professional practice (Singh, 1992; Kamp, 2014; RICS, 2015a). ~~and the ultimate penalty of being struck off. Such lecturers~~ They can 'prime' learners for what they may confront (Gainsburg, 2015) and are much more than 'disciplinary connoisseurs' -who simply transmitting knowledge to students (Henard and Roseveare 2012). Arguably, teaching and learning strategists, ~~such as the Director of Teaching and Learning~~ would prioritise such

knowledge and skills, and do readily endeavour to imbue ~~transferable, industry ready and~~ employability attributes, but also help 'students to transition from the identity of a student towards that of a graduate worker and citizen' (Artes et al., 2016, p.7). Indeed, these factors have recently been highlighted in the government ~~Higher Education Bill~~ green paper incorporating ~~at the~~ Teaching Excellence Framework (TEF) that claims to prioritises employability, student satisfaction, and embedded skills (Parliament, 2017 ~~BIS, 2015~~). ~~This green paper claims to prioritise teaching excellence by allowing institutions who score highly in TEF to charge higher fees.~~

Furthermore, such lecturers have strong industry links ~~with industry, for both teaching and research that; these links~~ can inform teaching, develop connectivity, blending theoretical and practical based research, and help with employability ~~industrial work placements and that~~ 'have become an integral part of recruiting new graduates' (High Fliers 2016, p.23).

employability.—Work placement schemes have many benefits; they contextualise learning, and companies can evaluate potential candidates for employment. Such schemes could be associated with key ~~highly important~~ employability and soft skills, and confidently producing industry ready graduates. Employability statistics are key performance indicators in the National Student Survey (NSS, 2017 ~~5~~; cf. Universities UK, 2010). Although many current university schemes utilize alumni contact ~~bases—details~~ to link current students with the workplace, these links—relationships are not as direct as with lecturers.

Regarding research and teaching links, Boyle's (2010, p.3) research for the Quality Assurance Agency (QAA) recommended research-teaching relations should help support the development of research-type graduate attributes, albeit his review did not show a "natural link between research and good teaching...it shows that the links need to be explicitly created". Although "it is difficult to identify conclusive evidence of the research-teaching relationship" (Russell Group, 2015, p.30, cf. Stappenbelt, 2013) arguably, more Pracademic type staff can better integrate—articulate such research. Arguably, the drive towards research creates detachment by removing industry links from academic promotion, and discouraging industry keeping links with academia (Dowling, 2015). ~~As Dowling notes, "there is a strong feeling amongst members of the academic community that collaborative research [with industry] is not valued as part of an academic career within universities"~~ (Dowling, 2015, p.30). Indeed, the shifting educational focus to employ Career Academics has been criticised by bodies such as the Royal Academy of Engineering (Graham, 2015).

There is arguably a symbiotic relationship whereby professional bodies need the universities and *vice versa* and these institutions accredit programmes. It has however been argued that such accreditation is done “perfunctorily or by rote” (Uziak et al., 2013), perhaps, we suggest, to satisfy accreditation criteria per se for Quality Assurance mechanisms rather than for industry. Indeed, “quality assurance systems do not build quality, they build procedures that claim to measure quality” (Allais, 2011, p. 251).

Thirdly, other key university functions are potentially debased by an absence of relevant practical experience. For Recruitment and Admissions, any accredited courses must “meet the quality standards established by the profession for which it prepares its students” (JBM, 2015, npg) and are often expressed as starting a lengthy and transformative journey. The ‘good’ degree aids meaningful employment in ~~a~~ relevant construction or engineering companies, ~~y~~ and ~~a~~ structured training agreements, successfully completed and assessed, leads to chartered status. ~~Nevertheless, actually inspiring students to enter construction and engineering professions can be difficult in a buoyant recruitment market with professions competing to attract and retain the best school leaving, sixth form or tertiary college cohorts.~~ The engaging Pracademic can readily convey their personal career path, give credibility to university recruitment processes, and validation to programme content. To lecturers with significant industrial ~~experience-practice, the~~ story telling may be second nature (Broome and Peirce, 1997): connectivity with syllabus is readily applied to projects and work place environment.

Moreover, ~~such connectivity the ability to connect syllabus and workplace environments~~ can help with providing information at ~~open days to potential students and their parents. This validates the currency and relevance of the product being sold. Importantly, at~~ open days and externally facing university activities. Importantly, Pracademics can meaningfully achieve many tasks; i) Inspire and engage prospective students upon initial contact, with subject and professionally specific industrially contextualised discussion ii) Satisfactorily explain the prospect of professional roles in construction and engineering with the benefits offered (financially, job stimulation, employment longevity); iii) Explain the role and functions the qualified professional typically undertakes; iv) ~~D~~iscussion based around reciprocal relationships between students and universities, and the symbiotic role of universities and professions via accreditation; v) ~~A~~answer industry and course specific queries, course content and professional accreditation.

Individual UK institution strategies to compensate for non-industry experienced lecturers

To compensate for ~~a lack~~ing-of staff with lengthy industrial experience, individual institutions have adopted numerous reactive and proactive strategies. Firstly, some have sought assistance from ‘subcontractors’ (‘vis-à-vis’ visiting teaching fellows/professors and adjunct professors) who are “hands-on practitioners and can relate and apply teaching material to operational issues and real-life problems that graduate engineers may face when entering industry” (Royal Academy of Engineering 2015). Adjunct professors/studio tutors are readily utilised in ‘architectural’ education and typically qualified chartered architects working mostly in architectural practice. ~~The validation and evaluation of architectural students’ work by adjunct professors/tutors may be powerfully motivating and meaningfully support the theoretical components of students’ education.~~ However, within a construction and engineering context such ~~options~~avenues have rarely been explored in the UK. Dilute forms have utilised guest lecturers but these are often disconnected from broader syllabus requirements and ~~may~~frequently revert to established presentations used by practitioners that ~~may~~do not readily support the topic. ~~It may be worthwhile exploring cultural differences between architectural and construction / engineering practitioners regarding attitudes to long term undergraduate programme support.~~

Furthermore, ~~regarding university administration~~, as adjuncts do not support broader programme functions such as administration and supervising dissertations, problems may arise. Also, adjuncts’ lack of permanence means challenges for invoking emergency cover measures may occur, especially without a ‘pool’ of adjunct professors. In addition, strong alumni and industrial links require continual nurturing to ensure retention of valued external temporary appointments. Arguably, such links are best forged and maintained by Pracademics, who more comprehensively ~~understand~~relate to the workplace realities faced by industrialists.

Based on the above we would suggest ~~some~~a number of key questions (see table below) ~~s which we introduce in tabular format. We suggest~~ the answers from which~~such~~ questions may help teaching and learning strategic direction and development, especially when seen within a TEF context.

Key questions related to the appeal of the career academic to individual institutions
--

Staff Demographics.

- | |
|--|
| <ul style="list-style-type: none"> • What percentage of academic staff have industrial experience? • What percentage of teaching dedicated and research dedicated staff exist within institutions? |
|--|

<ul style="list-style-type: none"> • Have these percentages changed in the last twenty or thirty years?
<p>Academic staff recruitment policy:</p> <ul style="list-style-type: none"> • What actually drives recruitment <u>of Career Academics</u>? • Is it an edict sent from a higher level than the school? • Is it expressed or is it tacit?
<p>Pedagogy:</p> <ul style="list-style-type: none"> • What do institutions feel would help Career Academics deliver more contextualised learning? • How do institutions validate the existing research-teaching nexus? • Are adjunct professors effectively utilised in the support of contextualised learning? How does the architectural education system facilitate and meaningfully engage with practitioners to effectively deliver expansive, contextualised student education? • How can institutions better monitor student transition into industry and feed this back into their programmes and courses? • Is current recruitment strategy at odds with the aspirations of the proposed TEF?

Two: The impact of the Career Academic on the student experience

Recent UKHE policy claims to put ‘students at the heart of the system’ (BIS 2011). This involved introducing full fees, so students are now buyers, or consumers, of education. Increasingly, however, students are taught by Career Academics whose ~~se~~ priorities reside with research ~~over~~ rather than teaching, and ~~the priorities of~~ strategic decision makers also prioritise research and not teaching-~~driven~~ (Royal Academy of Engineering, 2014). ~~Even~~ Attempts to redress this disparity by prioritising teaching through a TEF focus on pedagogical delivery alone (Parliament, 2017~~BIS 2015~~) ~~and~~ do not consider the value of practical industry experience. A key motivation is to allow universities to charge higher fees (Johnson, 2015), but ~~this alone in isolation this~~ will not redress ~~a~~ the lack of industry practice. Although students base ~~institution-HEI~~ choice on overall ranking (Spacial Economics Research Centre, 2013), they arguably pay more attention to components in these guides (e.g. Complete, 2015) such as ‘Entry Standards’, ‘Student Satisfaction’, and ‘Graduate Prospects’ rather than ‘Research Quality’. Additionally, Universities UK (2010) rank demand for ‘safe employment’ as the key factor in course choice. As a recent survey (N=15,129) notes:

“Overall, the priorities for students are that staff have received training in how to teach and possess professional/industry expertise, with around 40% of students placing each of those as being of primary importance. Being an active researcher is a lower priority, with over half (54%) of students ranking it third in importance.” (Buckley et-al 2015 p.30)

Research bias and its impact on the student experience

Land and Gordon (2015) note that in UKHE in general, “the elephant in the room, certainly in the UK, and most probably in many other higher education sectors, is the financial disparity between research excellence and teaching excellence” (Land and Gordon, 2015, p.21). ~~R~~Thus, ~~regarding status and reward,~~ research is accorded far greater emphasis than teaching (Land and Gordon, 2015). Little appears to have changed since 1971 when Halsey and Trow (1971, p.339) concluded that “researchers can look forward to a readership and can hope for a chair. Teachers cannot realistically hope for more than a senior lectureship”. ~~Indeed~~Significantly, many recruitment and tenure decisions are based on research, not teaching (Lewis, 2007), with resource allocation models and promotion decisions aligned (Graham, 2015). ~~In isolated cases of promotion for non-research academics (i.e. teaching and admin) it is essential to ensure overly lenient attempts to create rebalance in the system do not have a corrosive effect.~~ ~~Yet, a~~Although “a research-dominant culture is by no means universal,” (Graham, 2015, p.19) a teaching focused route *per se* is arguably not the solution. Indeed, tensions are evident in the lack of parity in promotions with teaching related professors (professorial teaching fellows), and as Macfarlane (2011, p.129) highlights:

“The notion of a ‘teaching professor’ is counter-posed, of course, by a ‘research professor’, an adjective which means, in effect, a ‘real’ professor. We do not need adjectives such as ‘research’ or ‘teaching’ to describe a professor... It is also hard to understand why someone who has achieved recognition for the quality of their scholarship at a national and international level would have been able to do so without publication in peer reviewed outlets. What matters is whether they have achieved the status and recognition, which corresponds with being a professor. The relevant question is simply, are they a distinguished authority in their field? This is what it means to be a professor”.

However, currently, such ~~a~~ scenarios only exists theoretically. Although decision makers insist the somewhat nebulous concept of teaching excellence is actually considered in promotion (Graham 2015), research is prioritised. This is despite more emphasis now being placed on the Scholarship of Teaching and Learning (SoTL) (see Fanghanel et-al 2014+05 [Graham 2016](#)) and teaching excellence, as stated in much promotion criteria and recent government policy and initiatives (Johnson, 2015; BIS, 2015). We argue for performance parity, that those moving upward ~~in-via~~ the teaching route need significant evidence, be this pedagogical related publications or evidence according to a TEF such as that currently proposed (BIS, 2015, cf. Burnett, 2015), to warrant promotion. One mechanism ~~could be~~ ~~stipulating~~ ~~is to insist~~ teaching staff have higher levels of Higher Education Academy (HEA) ~~fellowship~~ ~~qualifications~~. For example, ~~a~~ lecturers should attain Fellowship of the HEA; Senior lecturer, Senior Fellow; and professor, Principal Fellow. Furthermore, a significant ~~body~~ ~~quantity and quality~~ of peer reviewed publications in academic teaching and pedagogical areas of practice ~~would be expected~~. Clearly, for professorial fellow appointments, appropriate international recognition via invitation as editor of leading educational journals and the attaining of education based grant income would be expected. Whilst this may seem excessive, it attempts to bring in line the expectation of a research focused academic staff member's requirements.

This is urgently ~~required~~ ~~needed~~ given teaching's perception as ~~undervalued~~ second tier ~~and undervalued~~ in construction and engineering (Graham, 2015) and elsewhere in the sciences (Savkar and Lokere, 2010). In engineering, students have been found to feel staff value research more than teaching (Alplay et al., 2008). Such a culture is then perpetuated; Early Career Researchers ([ECR](#)) comment on receiving valuable career advice from experienced colleagues to prioritise research, not teaching (Graham, 2015). Barr (2008, p.20) notes what could be the logical conclusion: "in due course, civil engineering degrees will be taught in many universities by a team of academics without much industrial experience, which may not prove good for the profession." This does not reflect what students want (Buckley et al., 2015), and even if teaching is promoted, it still fails to compensate for a lack of industry experience.

The construction contextualised Pracademic

Arguably, if students are taught by Pracademics rather than Career Academics, the student [learning](#) experience is much enhanced (Buckley et al., 2015). Indeed, "across type of institution and irrespective of seniority, faculty with industrial experience spend a greater percentage of their time on teaching... are less likely to think about changing jobs to spend

more time on research, and are less likely to believe that publishing should be the primary criterion in promotion and tenure decisions” (Fairweather and Paulson, 1996, p.209). Although Pracademics will not automatically deliver better student learning experiences than Career Academics, many students seek to learn from ‘real-world examples’ (Collins & Davies 2009, p.13, cf. Broome and Peirce, 1997, Guardian, 2014, Dowling 2015, Alplay et al., 2008), and these can drive epistemological change in students (Gainsburg, 2015, cf. Fry et al., 2008), engage, and help retain students (Crosling et al., 2009). Pracademics can inform students where theory will or will not apply, ~~and for example, “if you use calculus on this kind of problem at work, they’ll fire you” (cited in Gainsburg, 2015, p.162).~~ Pracademics can draw on stories of legal challenges, worker error and interactions with clients to impart understandings both of discrete engineering concepts and of the overall profession (Gainsburg, 2015, cf. Broome and Peirce, 1997). S-and such qualities and abilities are valued by students in other European countries as well (e.g. Denmark (Christensen and Erno-Kjohlhede 2011)).

Many construction and engineering course modules (e.g. construction technology, construction process management, and site establishment) would undoubtedly benefit if Pracademics delivered them, ~~throughas they could readily~~ contextualizinge their practical experience of industry, daily problem-solving, and stressing ~~the value of~~ soft skills such as adapting communication and language to ~~multiplea range of~~ audiences (Gainsburg, 2015). Notably, “engineering teachers help engineering students achieve heroism: inwardly, by telling the stories of heroism in the practice of engineering; outwardly, by conditioning their learning experiences for heroism” (Broome and Peirce, 1997, p. 51). As a recent report from the University of Delft notes “Interacting with modern engineering professionals in design or research projects is the key to providing students with the role models for their future and exposes them to real-world professionals and the problems engineers face every day (Kamp, 2014, p.33). In Spain as well, recent research calls for a greater need to engage engineering students in more practical industry focused work to prepare them for employment (Fuentes-Del-Burgo and Navarro-Astor, 2016).

YetHowever, disengagement from students is often noted (e.g. Porter, 1991, Singh, 1992, Royal Academy of Engineering, 2014), ~~and it is and is~~ arguably due to UK government policy ~~that has created structures that foster such disengagement~~. Significantly, in vocational subject areas such as law, the medical profession (Uziak et al., 2013) and nursing (NMC 2015) links with the professional environment ~~are remain~~ much stronger. Although in areas such as

Nursing there is also a staff drift (cf. Kyvik, 2007) drift toward research, this has arguably not been to such a degree whereby practical experience has almost been completely sacrificed. Recent UK government exhortations (e.g. Johnson, 2015) and initiatives (Parliament, 2017BIS 2015) to improve teaching quality through a TEF Teaching Excellence Framework (TEF) arguably focus on the wrong target of teaching as a-meansthe mechanism to allow-permit institutions to differentiate tuition fees. They miss the right-correct target of employing an optimum balance of industry practitioners and focus on purely pedagogical issues drawing on current existing mechanisms such as the NSS for their data. Further,It would also mean that such initiatives would not be centrally funded, something noted by the National Union of Students (Guardian, 2015a).

The importance ofPracademics are arguablyis key. In the construction and engineering fields, it has been stated that the most fundamental question that can be asked of a student is ‘Do you want to build?’ Most practitioners refer to the rewards of creating something of permanence, a legacy, leaving something for posterity, being part of tangible history. It could be aArguably, ued that similarly, Career Academics similarlywill want to leave a legacy, but of work for posterity but their legacy is publications shed work rather than teaching (Hills and Lingard, 2004). Conversely, industry-experienced Pracademics will be more focused on teaching and instilling a lovean enthusiasm of the industry into students, to better prepare them for work. Only Pracademics could involve students in “Learning-by-doing-(together) in real-world, authentic problems and encouraging risk taking [which] must become an important aspect of future educational programmes” (Kamp, 2014, p.22). Furthermore, recent recommendations (Fanghanel et-al 2105, p.9) would suggest a faculty cultures that promotes the Scholarship of Teaching and Learning (SoTL) could promote and recognise Pracademics engagement in their own disciplinary and pedagogical research, and be REF returnable.

Evidence of the impact of these changes on the student experience:

EProviding evidencinge of any impact on the student experience is highly complex. The highly-generic 273 questions in the National Student Survey (NSS, 20175) afford no level of in-depth analysis, nor are the richer text-based supplementary student comments publically available for scrutiny. ArguablyFeedback, instead of currently being sought in-from students’ in their final year of study, feedback should be sought five, ten and even fifteen years after graduation (Beard, 2012). If students are taught largely by Career Academics, only when they encounter the workplace will they know how theory relates to practice.

One indirect approach ~~to that can~~ provide evidence related to student perceptions of being taught by Practitioners is ~~to~~ considering other subjects, for example Nursing~~the area of Nursing. Despite an increasing focus towards research and requirements for lecturers to have a PhD.~~ The Nursing and Midwifery Code of Practice is very clear ~~in criteria for teachers supporting learning and assessing in practice~~ that nurses who intend to teach at HE level must “be registered in the same part or sub-part of the register as the students they support” (NMC, 2015, p.33) and have completed “at least three years post-registration experience, gained additional professional knowledge and skills, and have experience in an area where students are gaining practice experience relevant to their registration” (ibid). Furthermore, they should have “extended their professional knowledge, relevant to their field of practice, to at least first degree level, prior to undertaking an NMC approved post-graduate teacher preparation programme” (ibid). This practice is normal ~~in the~~ health professions where “the majority of lecturers in health professions take up their academic posts having developed considerable clinical professional expertise” (Smith and Boyd 2012, p.64).

Such ‘link’ lecturers connect practice and theory and contextualise learning within ~~the~~ practical arenas they have personally experienced. They “create reality” (Bentley and Pegram, 2003, p.172) for students and maintain credibility through their foothold in the practical clinical area. This helps “ensure lecturers are legitimately able to facilitate students’ learning in the classroom, particularly the theory and practice of clinical skills” (Young et al., 2012, p.42). Others “highlight the link lecturer role in supporting students, participating in assessments, supporting mentors and maintaining clinical credibility” (Collington et al., 2012, p.924). Such a role constitutes 20% of lecturer time (MacIntosh, 2015) and helps integrate “theory-practice as dialectic through interplay between academics, practitioners and students” (Chan et al., 2012, p.1038). Thus, in Nursing, ~~the links~~ with the practical arena ~~are~~ key, helps contextualise learning, and gives lecturers credibility. Moreover, Nursing lecturers also produce research and are returned for REF. Nursing is not alone in having such links, and in the medical profession and law (Uziak et al., 2013) such links ~~are remain~~ strong. ~~Conversely, even though~~ in engineering and construction they are being challenged.

Given such trends look set to continue, and ~~that student~~ tuition fees are likely to increase ~~based on pedagogy and research alone~~, in construction and engineering education we foresee a widening gap between consumer expectation, university fees (where applicable), and actual delivery. We represent this in Figure 2:

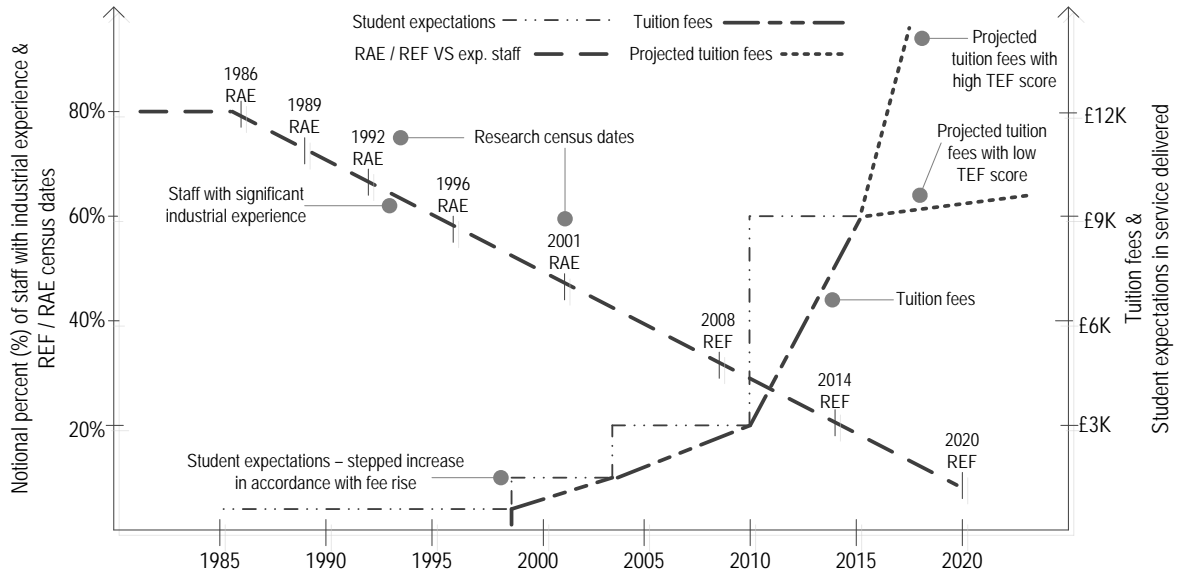


Figure 2: the widening gap between expectations and fees vs reduction in industrially experienced staff

The RAE/REF line denotes the theoretical reduction in staff with meaningful industrial experience and highlights the main RAE and REF census dates. Alterations in primary funding mechanisms for education are associated with certain points (Guardian 2015b; Independent, 2015, Johnson, 2015), namely, £1,000 (1998), £3,000 (2004) up to £9,000 (2010) increases in line with inflation and according to TEF results to upwards of £9,000 (2017 / 2018 onwards). The Student expectations line denotes the theoretical correlation between fees and expectations. The student acts as a consumer. If fees and expectations are coupled it is logical they will respond according to consumer behaviour.

Consumers hold both explicit and implicit performance expectations, and understanding both is critical to understanding satisfaction. Solomon et al (2014, p.165) highlight that the ‘price-quality relationship is one of the most pervasive market beliefs’. Furthermore, according to the ‘expectancy disconfirmation model’, an important lesson for marketers is ‘don’t over promise if you can’t deliver’ (Solomon et al., 2013, p. 403). In a UK construction and engineering education context as outlined, as institutional strategy currently employs Career Academics and this is at odds with student desires and expectations (Buckley et al., 2015), there is a danger exists that this strategy is exasperating a situation at odds with the aims of the TEF and the NSS.

Based on the above previous discourse we would suggest the following key questions:

The construction and engineering contextualised Pracademic

Industry and the student experience:

- What exactly is it about integrating industrial experience that can add to the student experience?
- How do students perceive ~~its~~the value ~~of it~~?
- Importantly, how can this be monitored?

Research and the student experience:

- How many Career Academics build their research into their teaching?
- How much is industry-based research?
- How can research be connected to the students?

Pedagogy:

- What can ~~C~~career ~~A~~academics learn from those with industry experience?
- Should promotion systems be more geared to teaching?
- What ‘Smart’ measures can be established to ensure promotion parity that is currently absent for teaching fellows ~~yet research has specific, measurable, REF returnable outputs?~~
- From a wider perspective, what is industry’s perception of this change?

Three: wider institutional strategy to employ Career Academics

For individual institutions, Career Academics are highly appealing, yet from wider perspectives, the policy to employ ~~them~~Career Academics can, we argue, have varying impact depending on the type/status of ~~institution~~HEI. ~~The diverse range and ostensible quality of UK institutions (e.g. post 92s, 94s, and Russell Group), means wider institutional strategy to employ and attract Career Academics enables those with significant research portfolios to ‘transfer’ to high-calibre institutions (Graham, 2015). Analogously to sports ‘transfer’ windows, increased ‘transfer’ of research active academics traditionally coincides with pre-REF census dates (REF 2014). Traditionally, c~~Certain institutions have made extensive new appointments in strategic efforts to improve the probability of higher success in REF (Gibbs et al., 2016), in moves analogous to sports ‘transfer’ windows, where Career Academics with significant research portfolios can move to higher calibre (see below) institutions.- Yet, TYet,

~~this is a high risk strategy, and~~ REF's response was to enforce regulations on minimum appointment length (or being in post) before census date. It is looking likely, based on the interim report from Stern (GovUK, 2016REF) that academic outputs will remain with the institution. This will notionally ~~close~~ the ~~notional~~ academic transfer window and ~~meaningfully reverting~~ to a pre-REF world ~~wherein which an academics were~~ employed for their potential. Another significant change may be ~~and that every academic staff member one with research in their contract will be returned for REF.~~ Concerns have been raised regarding in-post 'contract change' from research to teaching only with the loss of academic status and potentially employment vulnerability. Whilst ~~the~~ REF rules will undoubtedly alter, ~~s~~Strategic approaches and their possible impacts arguably differ greatly in upper quartile, Russell group institutions ~~as opposed to~~ ~~than in~~ post-1992, former polytechnic ~~type~~ institutions.

Russell & 1994 group (Upper quartile institutions).

Russell Group institutions in the UK are arguably the 'elite' 24 universities, and these are closely followed by a group of 11 prestigious institutions that called themselves the 1994 group. In both these institutions' groupings', research funding success rates are much greater (Guardian, 2014), and consequently staff generally teach less and research more. Such institutions have refined research infrastructures, both in tangible research facilities (e.g. laboratories) and, crucially in access to ~~an~~ extensive networks of high-calibre research focused internal and external academic staff (Russell International excellence Group, 2015; EPSRC 2015). This creates security and provides comfort for funding councils, leading to higher grant success, ~~which.~~ ~~This~~ subsequently impacts positively on institutional rank in national and international university league tables to appeal to the lucrative overseas student market. Such financial strength and wherewithal can ~~allow~~ ~~give~~ ~~such~~ institutions ~~the ability~~ to pursue research and also employ practical industry based lecturers and teaching staff for buy-out for researchers. Their 'status' is arguably a powerful attracting force for external engagement participation and willingness for industry collaboration. (i.e. which company would not wish to associate themselves with the Russel Group Brand — see Imperial, Cambridge, Oxford etc as a proxy for academic and research excellence).

Indeed, given the potential refinement and sophistication of the research/teaching model of such institutions, ~~upper quartile quasi-Russell Group universities~~ they may be more contextually aware of the implications of their actions. Indeed, to mitigate the accusation of decoupling theory from practice, there is emergent evidence of engaging in alternative recruitment strategies re: industrial experience. For example, ~~in~~ some Russell Group / 1994 type institutions, ~~recruitment is undertaken of~~ both career academics and industry experienced

lecturers (Pracademics). The former are recruited to focus on the income stream of research, the latter, even if in the minority, to attend ~~more~~ to the teaching and student recruitment income stream, and bewhilst remaining mindful of NSS results, ~~even if they are in the minority~~. These appointments are made at lecturer and senior lecturer level, and afford the ability to sustain and ultimately enhance ~~the~~ professional credibility and currency of ~~the~~ programmes and courses offered by the institutions. There are thus contradictory considerations of research, NSS and employability that may be reconciled by institutions if they are able in a position to do so (cf. Brunsson, 2002). For example, they can free time for researchers by reallocating teaching load. Also, almost all UKHE institutions have entire whole administrative sections dedicated to the PGCert, and encourage staff to apply for HEA Fellowship of the HEA (e.g. University of Bath 2013). ~~Most~~ The majority of Career Academics are required to be both researchers and HEA accredited ~~staff~~. As the system becomes increasingly recursive – heavy reliance on administration, procedure and uniformity, then symbols of excellence competence (such as PhD and PGCert) become key features in the search for customers. Upper quartile Institutions can provide these if they conform to the dual recruitment model, and for them ~~the~~ Career Academics functions relatively well: they can it enables them to retain their position, and, even if they often do pursue policies to employ Career Academics alone, they have the wherewithal to employ industrial experienced staff as well ~~as employ career academics~~.

Plate glass universities – new mid to upper quartile institutions

These 20 HEI institutions are mid to upper quartile institutions, they are considered generally fall short of ~~below lower grade compared with the~~ the Russell group and 1994 institutions in prestige and calibre, but deemed considered above higher ranking than former polytechnic post – 1992s (see below). That been said, several are characterised themselves as being Russell group (i.e. Bath & UEA). With the attainment of Royal Charter in the 1960s (most in 1966) ~~1966~~ the composition of these 20 Higher Education i Institutions have worked hard to grow research capacity, whilst attempting to retain core teaching values. Their ability to develop and mature as institutions has been principally undertaken in an unsaturated university market (1966-1992). ~~Theyse institutions have~~ pursued aggressive research intensification strategies after the first RAE in 1986, and 6. ~~These institutions~~ have done remarkably well regarding research power. The composition of staff employed at these institutions is a natural response to government drivers and they arguably now have cultures that resonate with many accepted features of the Russell and former 1994 group, and several characterise themselves as Russell group (i.e. Bath & UEA). It is likely, given this situation,

there may well have been a significant change in their staff demographic since the inception of the RAE in 1986.

Post-1992s

~~Nevertheless, for other types of institutions, most notably the post-92s, such wherewithal is frequently lacking. Post-1992s are former polytechnics which were granted university status in 1992. Their subject areas are often frequently vocational and they have traditionally been teaching rather than research focused.~~ For post-1992s the feasibility and success of pursuing a policy of employing career academics is less certain. Regarding the facilitation of research, this is more difficult to achieve. Tangible teaching implications are unavoidable as post-1992s navigate towards and implement research intensification strategies (Tennant et al., 2015). The relative proportion of income derived from research in upper quartile institutions (arguably twinned with notable significant alumni foundation funding) enable reductions in reliance on teaching income. Funding can be utilised effectively to reduce staff-student ratios, 'creating time for research'. Conversely, post-1992 institutions rely heavily upon teaching as a primary funding source, with a significantly lower income proportion from research council funding. Moreover, Russell Group institutions can, based on their ranking from research, gain significant income from overseas postgraduate recruitment (Times Higher Education, 2017) Given the current 'system' for income generation, the process of transition in post-1992 institutions from teaching focused towards research-led Career Academics presents significant ~~levels of~~ risk. Further, the challenge for ~~a~~ Career Academics working in a post-1992 institution to compete with Career Academics in upper-quartile pre-1992 establishments is much greater.

In post-1992s, ~~the~~ requirements for teaching, administration, course leadership and so on on, all of which impedes research outputs. Time allocated to research is available but much less than in Russell Group or upper quartile institutions. Thus, ~~the~~ post-1992 Career Academics may feel frustrated ~~and unsettled~~ at being unable commit ~~the~~ equivalent time to research and publish compared to as their colleagues in Russell Group institution colleagues. Consequently, their commitment may is likely to be fragile and they may seek opportunities for employment elsewhere. This creates-promotes a nomadic faculty workforce, where self-interest becomes a distinctive factor (Porter, 1991). Ironically, those who move will be those who can, i.e. those with success (cf. Graham, 2015), whereas those employed as Career Academics who do not produce the desired outputs or income will ~~be less attractive and~~ find moving harder. The

results are arguably the worst of both worlds for the institution: it has employed staff who do not produce research and who cannot contextualise their teaching.

The challenge is arguably twofold: one, teaching commitment is typically higher than in research intensive establishments and two, attaining research council funding is diminished due to infrastructural and cultural weaknesses. Indeed, approximately 80% of all Research Council funding is attained by 20% of universities in the UK (Guardian, 2014) in a system akin to the Pareto principle (Vaccaro, 2000). For any institution, major risks are clearly associated with potentially losing course credibility that may occur during the transition. Disgruntled students become dissatisfied customers, and potentially negatively impact on NSS statistics and other rankings, ~~with palpable~~ concomitant loss of repeat business ~~is palpable~~.

Unfortunately, although some post-~~19-1992~~ universities have chosen to become civic universities, retaining their polytechnic ethos, and focusing on teaching alone, many ~~post-1992 universities are~~ continually ~~aspireing~~ to close the gap in research with ~~the~~ leading institutions. Yet, ~~there can~~ only ~~be~~ a few ~~can be~~ 'leaders' in an ever crowded and competitive sector, and strategies employed must navigate the complex issues surrounding resource allocation for research, teaching and administration.

Paradoxically, ~~the~~ transition from polytechnic to university status may impact detrimentally upon the institution, and ~~may~~ be seen as betraying the polytechnic ethos. Detractors argue that taking ~~the institutions~~ away from ~~theirs~~ original raison d'être of providing industry relevant, vocational teaching destroys the heart of ~~their~~ ~~the institution's~~ competitive advantage over ~~the~~ upper quartile universities. The ~~polytechnic's~~ credibility ~~of the polytechnic~~ was surely the closely aligned teaching - professional nexus that created industry 'primed', professionally aware construction and engineering professionals (much in accordance with the proposed TEF). The reputational damage of breaking this link by employing solely ~~C~~career ~~A~~academics could affect course credibility. Thus, from ~~a~~ wider and broader institutional perspectives, although elite institutions have the wherewithal to work within the system and perpetuate and consolidate their positions, the post-~~1992s~~ do not. In ~~post-1992s~~ ~~these institutions~~, we argue, a non-industry linked and decontextualised student ~~learning~~ experience is often being promoted and followed.

~~We argue this is significant~~ ~~Regarding whether any of this matters, arguably it does, inas~~ ~~it~~ ~~creat~~ ~~inges~~ a divisive system whereby there are those who teach, and those who do research. In a recent report, *Does teaching advance your academic career?* Graham (2015, citing Soyster, 2008, Fairweather, 2008, Felder & Hadgraft, 2013) found ~~that~~ ~~“~~“concerns have been

raised that research performance appears to drive academic promotion, with teaching playing a more marginal role”. Moreover, ~~regarding in relation to~~ addressing this problem:

“The engineering community is well-positioned to take a lead in this transformation. With teaching excellence integrated into the promotions process, engineering education in the UK would be equipped to provide world-leading programmes that prepare graduates for the engineering challenges of the 21st century.” (Graham 2015, p.4)

Furthermore, government policy is creating a system where those institutions who pursue a system of employing Career Academics are being forced to transform their institutions into those whereby industry grounded practitioners no longer exist. To encourage post-1992s to do this in pursuit of government policy, is to encourage them to play catch-up at the risk of losing their identity, employing staff who are unable to attain outputs and ~~will~~ feel disgruntled, and ~~be a policy that negatively~~ impact ~~negatively~~ upon the student experience. In the upper quartile universities, however, this is at a conscious level of following UK research money but may again be forcing institutions to follow government policy that may negatively impact upon the student experience. Based on the above, we would suggest ~~(see table below) these a number of~~ key questions.

Key questions related to wider institutional strategy to employ Career Academics
<p>Strategic Approaches:</p> <ul style="list-style-type: none"> • What would a comprehensive survey of UK institutions show about the composition of construction & engineering departments regarding the how much industrial experience their staff body held? • How would this compare with past the situations in the past? • What is the impact on an institution’s identity of having a high staff turnover base?
<p>Staff and students:</p> <ul style="list-style-type: none"> • How nomadic is the staff base, i.e. what is the staff turnover rate? • How do staff and students feel in such different institutions compared with each other? <p>How do they feel in the post 1992s at such developments, and how do they feel in the Russell institutions?</p>

- Do staff feel their ~~identity of their~~ institution's identity is changing ~~through~~ as a result of such strategies?
- Furthermore, what suggestions for future direction would they offer? (cf. Tennant et al., 2015).

Conclusion: does the system want what it ~~is~~ gets?

This polemical paper has critically explored the concept of the Career Academic within the context of the current UK Higher Education system. The paper is not a critique of research *per se*, nor a call for immediate parity between research and teaching without ~~the~~ a need to have a way to assure an evidenced-based teaching development route. Instead, the aim is to ~~generate~~ raise questions regarding how the UK-HE system (and by extension other systems elsewhere) is developing-changing, especially in the delivery of construction and engineering education. ~~to have its ranks~~ Over the past two decades construction and engineering faculties have become populated by Career Academics ~~in a practically focused and industry linked area of education where~~ that previously ~~had~~ large numbers of industry experienced and teaching focused staff existed. ~~We note as well that in a wider European context the UK's recent strategies resonate with ideas of academic 'drift' and thus provide a point for reflection for policy makers elsewhere in Europe.~~ Throughout we have raised ~~a number of~~ key questions around the three areas of the appeal of the Career Academic to the individual institution, the impact of the Career Academic on the student experience, and of wider institutional strategy to employ Career Academics ~~in a UK HE perspective.~~ We believe these questions merit ~~further~~ attention from policy makers, institutions, and researchers. This is particularly poignant given the potential demands of the new TEF, and it seems likely ~~that~~ the bias towards employing Career Academics takes us further away from the TEF's aspirations of an enhanced student learning experience. As Kamp (2014, p. 15) has noted, in an engineering context, "the how we teach will become equally or more important than the what and how much we teach."

We believe investigating and considering them will help answer the question of whether the system ~~does indeed~~ gets what it wants. We ourselves are unsure of ~~not sure what~~ the answer to the question is ~~is~~, but ~~we~~ worry ~~that~~ the current system ostensibly creates a 'glass ceiling barrier to entry' with ~~the~~ insistence on the PhD qualification that frequently prevents those with industry experience wishing to pursue a mid-career change from entering construction and engineering education. Paradoxically, it is well understood that ~~a~~ links exists

between students' aspirations to be taught by those with relevant practical experience who better contextualise subject material. Yet, this professional recruitment strategy is arguably at odds with a student recruitment strategy that creates 'space' for those who may be deemed 'disadvantaged'. What we have argued above is that a balanced departmental portfolio with a mix of industrial focus Pracademics as well as Career Academics would recognise the connectivity between industrial and theoretical capital. This would be achieved by ~~a shifting in~~ recruitment practices to former times when Pracademics were able to apply for and gain lectureships alongside Career Academics. We have also argued that recent government initiatives to focus on teaching as pedagogy per se do not focus on the right target. Additionally, issues surrounding student engagement and retention are shown to be correlated with contextualised learning that is arguably best offered by industry focused staff. Reactive strategies to support contextualised learning are many but, if well implemented, the use of adjunct professors for key subjects would undoubtedly enhance the student experience. Furthermore, to carefully consider and investigate the questions we have highlighted above. As Fung et al (2017, p.9) emphasise, 'only a small percentage of students will become university academics. The students' plans and values concerning their own futures as European and / or global citizens needs to be considered seriously; they are a source of motivation (Fung et al., 2017 p.9). We agree, and argue that a This would then refocus more on the student experience ~~and~~, from an industry perspective, will give students more confidence that courses ~~are were~~ delivered by those with the necessary experience and professional values. By doing this, and creating a diverse academic staff base, institutions will better be able to engage students, retain students, and create students with industry ready skills. background. This would help ensure that students receive a practical grounding in their discipline:

~~since only a small percentage of students will become university academics. The students' plans and values concerning their own futures as European and / or global citizens needs to be considered seriously; they are a source of motivation (Fung et al 2017 p.9)~~

References

- Allais, S. 2011. "The Impact and Implementation of National Qualifications Frameworks: A Comparison of 16 Countries." *Journal of Education and Work* 24: 3-4, 233-259.
- Alplay, E., Ahearn, A. L., Graham, R.H., and Bull, A.M.J. 2008. Student enthusiasm for engineering: charting changes in student aspirations and motivation. *European Journal of Engineering*, 33: 5-6, 573-585.

- Alplay, E. and Jones, M. E. 2012. Engineering education in research intensive universities. *European Journal of Engineering Education*, 37, 609 - 626.
- Andrew, N, Lopes, Pereira, F and Lima, I (2014) Building communities in higher education: the case of nursing. *Teaching in Higher Education*, 19:1, 72-77.
- Arlett, C., Lamb, F., Dales, R., Willis, L. & Hurdle, E. 2010. Meeting the needs of industry: the drivers for change in engineering education. *Engineering Education*, 54, 18 - 25.
- Artess, J., Hooley, T and Mellors-Bourne, R (2017) *Employability: A review of the literature 2012 to 2016*. The Higher Education Academy. <https://www.heacademy.ac.uk/resource/employability-review-literature-2012-2016>
- Barr, B. 2008. UK civil engineering education in the twenty-first century. *Proceedings of the Institution of Civil Engineers - Management, Procurement and Law*, 161, 17 - 23.
- Beard, M. 2012. *A point of view: when students answer back*. Available at <http://www.bbc.co.uk/news/magazine-20531666>
Last accessed 04.12.2015.
- Bekhrandnia, B (2016) *International university rankings: For good or ill? Higher Education Policy Institute Report No. 89*. <http://www.hepi.ac.uk/2016/12/15/3734/> Last Accessed 26.02.2017
- Bentley, J. and Pegram, A. 2003. Achieving confidence and competence for lecturers in a practice context, *Nurse Education in Practice*, 3, 171-8.
- BIS. 2011. Department for Business Innovation and Skills. Higher Education. Students at the Heart of the System. June 2011. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31384/11-944-higher-education-students-at-heart-of-system.pdf Last accessed 01.05.2015.
- BIS. 2015. Department for Business Innovation and Skills. Fulfilling our Potential. Teaching Excellence, Student Mobility and Student Choice. November 2015. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/474227/BIS-15-623-fulfilling-our-potential-teaching-excellence-social-mobility-and-student-choice.pdf Last Accessed 13.12.2015.
- Boyle J (2010) *Research-Teaching Linkages: enhancing graduate attributes, Engineering and the Built Environment*, Quality Assurance Agency for Higher Education, <http://www.enhancementthemes.ac.uk/docs/publications/enhancing-graduate-attributes-engineering-and-the-built-environment.pdf?sfvrsn=14> Last accessed 25.10.2015.
- Broome, T. H., and Peirce, J. 1997. The heroic engineer. *Journal of Engineering Education*, 86:1, 51-55.
- Brunsson, N. 2002. *The organization of hypocrisy: Talk, decisions, and actions in organizations*. Oslo: Abstrakt forlag.
- Buckley, A, Soilemetzidis, I and Hillman, M. 2015. The 2015 Student Academic Experience Survey, Higher Education Policy Institute, [http://31.25.185.230/wp-content/uploads/2015/06/AS-PRINTED-HEA HEPI report print4.pdf](http://31.25.185.230/wp-content/uploads/2015/06/AS-PRINTED-HEA_HEPI_report_print4.pdf)
Last accessed 26.07.2015.
- Burnett, K. 2015. *Want to raise the quality of teaching? Start with academic freedom*. Times Higher Education available at <https://www.timeshighereducation.co.uk/blog/want-raise-quality-teaching-begin-academic-freedom> Last accessed 20.08.2015.
- ~~CIOB. 2015. *CIOB Home page*. Available at <http://www.ciob.org/> Last accessed 03.09.2015~~
- Chan, E. A., Chan, K., and Liu, Y. W. J. 2012. A triadic interplay between academics, practitioners and students in the nursing theory and practice dialectic. *Journal of advanced nursing*, 68: 5, 1038-1049.

- Christensen, S. H., and Erno-Kjølhed, E. (2011). Academic drift in Danish professional engineering education. Myth or reality? Opportunity or threat?. *European journal of engineering education*, 36(3), 285-299.
- Clarke, B. 2012. The 2011 James Forrest Lecture - engineering education - a historical perspective of the future. *Civil Engineering and Environmental Systems*, 29, 191 - 212.
- CIOB. 2015. *CIOB Home page*. Available at <http://www.ciob.org/> Last accessed 03.09.2015
- Collington, V., Mallik, M., Doris, F., and Fraser, D. 2012. Supporting the midwifery practice-based curriculum: The role of the link lecturer. *Nurse education today*, 32:8, 924-929.
- Collins, K. and Davies, J. 2009. Feedback through student essay competitions: what makes a good engineering lecturer? *Engineering Education*, 4, 8 - 15.
- Complete. 2015. 'Top University League Tables and Rankings 2016' available at <http://www.thecompleteuniversityguide.co.uk/league-tables/rankings> Last accessed 03.09.2015
- Crosling, G., Heagney, M., and Thomas, L. 2009. *Improving student retention in higher education: Improving teaching and learning*. London: Routledge
- Demski, J. S., and Zimmerman, J. L. (2000). On "Research vs. Teaching": A long-term perspective. *Accounting Horizons*, 14:3, 343-352.
- Dowling, A. 2015. *The Dowling Review of Business-University Research Collaborations*. Available at <http://www.raeng.org.uk/publications/reports/the-dowling-review-of-business-university-research> Last accessed 3.10.2015.
- EPSRC. 2015. *Case for Support*. Available at <https://www.epsrc.ac.uk/funding/howtoapply/preparing/writing/caseforsupport/> Last accessed 04.12.2015.
- Fanghanel J Pritchard J Potter J and Wisker G (2015) Defining and supporting the Scholarship of Teaching and Learning (SoTL): A sector-wide study, <https://www.heacademy.ac.uk/sites/default/files/sotl-executive-summary.pdf> last accessed 25.10.2015.
- Fairweather, J. and Paulson, K. 1996. Industrial Experience: Its Role in Faculty Commitment to Teaching. *Journal of Engineering Education*, 85, 209–215.
- Fairweather, J. 2008. *Linking evidence and promising practices in science, technology, engineering, and mathematics (STEM) undergraduate education*. Status report for the National Academies National Research Council Board of Science Education.
- Felder, R.M. and Hadgraft, R.G. 2013. Educational practice and educational research in engineering: partners, antagonists, or ships passing in the night? *Journal of Engineering Education*, 102:3, 339–345.
- Fry, H., Ketteridge, S., and Marshall, S. (Eds.). 2008. *A handbook for teaching and learning in higher education: Enhancing academic practice*. London: Routledge.
- Fuentes-Del-Burgo, J. & Navarro-Astor, E. (2016). What is engineering education for? Listening to the voices of some Spanish building engineers. *Journal of Engineering, Design and Technology*, 14(4), 897-919.
- Fung, D. Besters-Dilger, J and van der Vaar, R (2017) *Excellent education in research-rich universities*. League of European Research Universities (LERU) <http://www.leru.org/index.php/public/news/excellent-education-in-research-rich-universities-new-possibilities-for-europe-today/>

- Gainsburg, J. 2015. Engineering Students' Epistemological Views on Mathematical Methods in Engineering. *Journal of Engineering Education*, 104:2, 139-166.
- Gibbs G, Bekhradnia B, King R, Attle G, Stockwell R, and Sims E (2016) Response to the higher education green paper, Higher Education Policy Institute Report 81, <http://www.hepi.ac.uk/2016/01/07/response-to-the-higher-education-green-paper/> Last accessed 26.02.2017.
- Goldberg, D.E and Somerville, M (2014) *A whole new engineer: the coming revolution in engineering education*. Threejoy Associates, Inc: Michigan.
- Gov. UK (2017) Lord Stern sets out proposals to protect and strengthen university research. Available at <https://www.gov.uk/government/news/lord-stern-sets-out-proposals-to-protect-and-strengthen-university-research> Last Accessed 27.02.2017.
- Graham, R. 2012. *Achieving excellence in engineering education: the ingredients of successful change*. The Royal Academy of Engineering.
- Graham, R. 2015. *Does teaching advance your academic career? Perspectives of promotion procedures in UK higher education*. The Royal Academy of Engineering. <http://www.raeng.org.uk/publications/reports/does-teaching-advance-your-academic-career> Last accessed 26.07.2015.
- Graham, R. 2016. *Does teaching advance your academic career? Interim report on the development of a template for evaluating teaching achievement* [http://www.raeng.org.uk/publications/reports/does-teaching-advance-your-academic-career-\(1\)](http://www.raeng.org.uk/publications/reports/does-teaching-advance-your-academic-career-(1))
- Greenfield, T. 1996. *Research methods guidance for postgraduates* London: Arnold
- Griffin, R. 2013. *Fundamentals of management*. Cengage Learning.
- Guardian. 2014. *University Research Excellence Framework 2014 – the Full rankings*. Available at <http://www.theguardian.com/news/datablog/ng-interactive/2014/dec/18/university-research-excellence-framework-2014-full-rankings> Last accessed 14.08.2014.
- Guardian. 2015. *University league tables 2016* Available at <http://www.theguardian.com/education/ng-interactive/2015/may/25/university-league-tables-2016> Last accessed 03.09.2015
- Guardian. 2015a. *The Teaching Excellence Framework. Can higher education up its game?* Available at <http://www.theguardian.com/education/2015/nov/02/teaching-excellence-framework-university-tef-student-data-higher-education> Last Accessed 10.11.2015.
- Guardian. 2015b. *Timeline: Tuition Fees*. Available at: <http://www.theguardian.com/education/2004/jan/27/tuitionfees.students> Last accessed 01.12.2015
- Halsey A H and Trow M A (1971) *The British Academics*, Faber and Faber, London.
- Harari, Y. N. 2014. *Sapiens: A brief history of Humankind*. London: Harvill Secker.
- Hasluck, C., and Hogarth, T. 2010. The net benefits to employers' investments in apprenticeships: Case study evidence from the UK. *The Canadian Apprenticeship Journal*, 2.
- Henard, F and Roseveare, D (2012) *Fostering Quality Teaching in Higher Education: Policies and Practices. An IMHE Guide for Higher Education Institutions*. <https://www.oecd.org/edu/imhe/QT%20policies%20and%20practices.pdf>

- Hills, G., & Lingard, R. 2004. *UHI: The making of a university*. London: Dunedin Academic Press Ltd.
- High Fliers (2016) *The Graduate Market in 2016: Annual review of graduate vacancies & starting salaries at Britain's leading employers*
http://www.highfliers.co.uk/download/2016/graduate_market/GMReport16.pdf
- Horne, M. 1983. Academia - the role of the higher education establishments. *The Structural Engineer*, 61, 310 - 311.
- ICE. 2015. *Institution of Civil Engineers. Becoming a member of ICE*. Available at
<https://www.ice.org.uk/membership/grades-of-ice-membership/member-of-ice> Last Accessed 26.11.2015.
- Independent. 2015. *Budget 2015: Universities will be allowed to raise fees beyond £9,000, says George Osborne*
 Available at <http://www.independent.co.uk/news/uk/politics/budget-2015-live-emergency-uk-universities-will-be-allowed-to-raise-fees-beyond-9000-10375910.html> Last accessed 1.12.2015
- Johnson, J. 2015. *Higher education: fulfilling our potential*. Available at
<https://www.gov.uk/government/speeches/higher-education-fulfilling-our-potential> Last Accessed 10.11.2015
- Joint Board of Moderators. 2015. *Accreditation* Available at <http://www.jbm.org.uk/accreditation.aspx> Last accessed 13.12.2015
- Kalleberg, A. L. 2000. Nonstandard employment relations: Part-time, temporary and contract work. *Annual review of sociology*, 341-365.
- Kamp, A. (2014). *Engineering Education in the Rapidly Changing World. Rethinking the Mission and Vision on Engineering Education at TU Delft. Delft University of Technology, Delft, The Netherlands.*
- Kealey, T. 2008. *Sex, science and profits*. London:Heinemann.
- Knight, A and Ruddock, L 2008. *Advanced research methods in the built environment*. Chichester, UK: Wiley-Blackwell
- Kolb, D. A. 2014. *Experiential learning: Experience as the source of learning and development*. FT Press.
- Kyvik, S., 2007. Academic drift – a reinterpretation. In: J. Enders and F.A. van Vught eds. *Towards a cartography of higher education policy change: A Festschrift in honour of Guy Neave. Enschede: Center for Higher Education Policy Studies, 333–338.*
- Lamb, F., Arlett, C., Dales, R., Ditchfield, B. and Parkin, B. 2010. *Engineering graduates for industry*. The Royal Academy for Engineering, London, UK.
- Land, R., and Gordon, G. 2015. *Teaching excellence initiatives: modalities and operational factors*. York: Higher Education Academy.
- Lewis, H. R. 2007. *Excellence without a soul: Does liberal education have a future?* New York: Public Affairs.
- Macfarlane, B. 2011. Prizes, pedagogic research and teaching professors: lowering the status of teaching and learning through bifurcation. *Teaching in Higher Education*, 16: 1, 127-130.
- MacIntosh, T. 2015. The link lecturer role; inconsistent and incongruent realities. *Nurse education today*, 35:3, 8-13.
- Neave, G. 1979. Academic drift: Some views from Europe. *Studies in Higher Education*, 4(2), 143-159.
- NMC. 2015. Nursing & Midwifery Council. Standards to support leaning and assessment in practice. NMC standards for mentors, practice teachers and teachers. Available at <http://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/nmc-standards-to-support-learning-assessment.pdf> Last accessed 01.05.2015.
- NSS. 2017. 'The National Student Survey' Available at <http://www.thestudentsurvey.com/>
<http://www.thestudentsurvey.com/> Last accessed 27.02.2017/03-09-2015

Park, C. 2005. New variant PhD: The changing nature of the doctorate in the UK. *Journal of Higher Education Policy and Management*, 27:2, 189-207.

Parliament (2017) 'Lords examines Higher Education and Research Bill' Available at <https://www.parliament.uk/business/news/2016/december/lords-debates-higher-education-and-research-bill/>
Last accessed 07.02.2017

Phillips, E. M. and Pugh, D. S. 2010. *How to get a PhD a handbook for students and their supervisors* Maidenhead: Open University Press.

Porter, J. C. 1991. One perception of engineering academia. *Journal of professional issues in engineering education and practice*, 117:3, 214-227.

REF. 2014. *Research Excellence Framework*. Available at <http://www.ref.ac.uk/> Last accessed 03.09.2015.

Regan, J. A. 2012. The role obligations of students and lecturers in higher education. *Journal of Philosophy of Education*, 46:1, 14-24.

RICS. 2015. *APC Final Assessment*. Available at <http://www.rics.org/uk/apc/> Last accessed 03.09.2015

RICS. 2015a. *Ethics and Professional Standards*. Available at <http://www.rics.org/uk/regulation1/compliance1/ethics--professional-standards/> Last accessed 10.11.2015

Royal Academy of Engineering. 2014. *The Universe of Engineering: A call to action*. Available at <http://www.raeng.org.uk/publications/reports/the-universe-of-engineering> Last accessed 10.11.2015.

Royal Academy of Engineering. 2015. *Visiting Teaching Fellows*. Available at <http://www.raeng.org.uk/grants-and-prizes/schemes-for-people-in-industry/ove-arup-raeng-visiting-teaching-fellows> Last accessed 26.07.2015.

Russell Group. 2015. *Research at Russell Group Universities* Available at: <http://www.russellgroup.ac.uk/research/>
Last accessed 03.09.2015.

Russell International Excellence Group. 2015. *Research-led learning: the heart of a Russell Group university experience*. Available at <http://www.russellgroup.ac.uk/uploads/Learning-in-a-research-intensive-environment.pdf>
Last accessed 26.07.2015.

Savkar, V. and Lokere J. 2010. *Time to Decide: The Ambivalence of the World of Science toward Education*. Cambridge, Massachusetts: Nature Education

Schein, E. H. 1970. *Organizational psychology*. Englewood Cliffs, NJ: Prentice-Hall.

Singh, A. 1992. Experience-based issues in construction education. *Journal of professional issues in engineering education and practice*, 118:4, 388-402.

Smith, C. and Boyd, P. 2012. Becoming an academic: the reconstruction of identity by recently appointed lecturers in nursing, midwifery and the allied health professions. *Innovations in Education and Teaching International*, 49:1, 63-72 doi: 10.1080/14703297.2012.647784

Snell, K. D. M. 1996. The apprenticeship system in British history: the fragmentation of a cultural institution. *History of Education*, 25, 303 - 321.

Solomon, M., Marshall, G. W., Stuart, E. W., Barnes, B. R., & Mitchell, V. W. 2013. *Marketing: Real people, real decisions*. Amsterdam: Pearson.

Solomon, M. R., Bamossy, G. J., Askegaard, S., Hogg, M. K., & Pearson. 2014. *Consumer behaviour: A European perspective*. Harlow: Pearson.

Soyster, A.L. 2008. Guest editorial: The business of engineering education. *Journal of Engineering Education* 97:1, 3-4.

- Spatial Economics Research Centre. 2013. *Student satisfaction, league tables and university rankings, SERC discussion paper 142, Sept 2013*. London, London School of Economics. Available at: <http://www.spataleconomics.ac.uk/textonly/SERC/publications/download/sercdp0142.pdf> Last accessed 01.09.2015.
- Stappenbelt, B. 2013. The effectiveness of the teaching-research nexus in facilitating student learning. *Engineering Education*, 8, 111 - 121.
- Sykes C (1988) ProfScam: Professors and the demise of higher education. Washington: Regnery Gateway.
- Tennant, S., Murray, M., Forster, A., and Pilcher, N. 2015. Hunt the shadow not the substance: the rise of the career academic in construction education *Teaching in Higher Education* 20:7, 723 – 737 doi: 10.1080/13562517.2015.1070342
- Universities UK. 2010. *Recession to recovery: changes in student choices and graduate employment*. London: Higher Educations Careers Service Unit.
- University of Bath. 2013. *Institutional Review by the Quality Assurance Agency for Higher Education* Available at: <http://www.bath.ac.uk/quality/documents/Bath-IR-report-May-2013.pdf> Last accessed 15.12.2015
- UKGov. 2015. *Universities minister demands better value for money for students*. Available at <https://www.gov.uk/government/news/universities-minister-demands-better-value-for-money-for-students> Last accessed 10.11.2015
- UKGov. 2015a. *Higher education: teaching excellence, student mobility and social choice*. Available at <https://www.gov.uk/government/consultations/higher-education-teaching-excellence-social-mobility-and-student-choice> Last accessed 04.12.2015.
- Uziak, J., Oladiran, M. T., Walczak, M., and Gizejowski, M. (2013). Is accreditation an opportunity for positive change or a mirage? *Journal of Professional Issues in Engineering Education and Practice*, 140:1, 02513001.
- Vaccaro, P. J. 2000. The 80/20 rule of time management. *Family Practice Management*, 7:8, 76-76.
- Vinney, J (2016) Research and teaching – joined at the hip or driven apart? <http://www.hepi.ac.uk/2016/12/05/research-teaching-joined-hip-driven-apart/> Last Accessed 26.02.2017
- Westacott, R. 2013. Education: Get Real. *The Chemical Engineer*, 36 - 37.
- Willets, D. 2010. *Science and Research Funding 2011-12 to 2014-15* Written Ministerial Statements. Available at <http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm101220/wmstext/101220m0001.htm> Last accessed 03.09.2015
- Young, N., Evans, N., and Bowring-Lossock, E. (2012), The Practice Engagement Framework: a framework that assists the identification and development of the clinical role for lecturers in mental health nursing. *The Journal of Mental Health Training, Education and Practice*, 7:1, 42 – 46