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Smith, Kelly

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Measuring the Impact of Entrepreneurship Education within Higher Education

Kelly Smith
University of Birmingham
k.j.smith@bham.ac.uk

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A direct link between entrepreneurship education within Higher Education and business start-up and other economic growth measures is often assumed. The supporting literature on this is limited, however, with few studies looking at impact measures relating to actual venture creation. Where studies do exist, there is evidence of a generally positive relationship between engagement with entrepreneurship education programmes and outcomes such as entrepreneurial intent, acquisition of business-related skills and knowledge, actual business start-up, and company growth. Further research with an increased level of methodological rigour and which follows participants over a longer time period is needed, however, to confirm and better understand the situations in which the impacts important for economic growth can be created.

Background

Policymakers have highlighted the potential of university-provided entrepreneurship education as a potential driver to economic growth over several decades. One of the most influential early reviews was the National Committee of Inquiry into Higher Education (Dearing, 1997) that recommended that universities consider the scope for encouraging entrepreneurship through innovative approaches to programme design. Soon after, in 2000, business and entrepreneurial development was listed as one of four strategic goals for British universities (Universities UK, 2000).

The UK Government introduced a significant third funding stream for Higher Education Institutions (HEIs) in 1999 called the Higher Education Innovation Fund (HEIF). The aim of this initiative was to add value to society and the economy through the transfer of knowledge and presented an opportunity for HEIs to contribute to the development of entrepreneurial and enterprising staff, students, and graduates (Davis et al., 2002).

University student and graduate entrepreneurship in the UK and Europe has since been seen as a vital source of competitiveness and growth, and a possible stimulus to the development of a knowledge-based economy. It is frequently featured in policy reports and reviews such as those published by BIS (2010), BERR (2008), and European Commission (2012, 2008 and 2006). UK Government commissioned reports and reviews explicitly referencing and calling for entrepreneurship education or support for graduate

start-up include the Wilson (2012), Witty (2013) and Dowling (2015) reviews of University-Business collaborations and the role of HEIs in economic growth; the APPG Microbusiness (2014) report 'An Education System Fit for an Entrepreneur'; Lord Young's (2014) 'Enterprise for All'; and the APPG for Entrepreneurship (2018) report on Enterprise Education.

Despite the importance of the issue from a policymaker point of view, little rigorous research is available concerning the assessment and measurement of entrepreneurship education programmes and courses relating to subsequent entrepreneurial behaviour and action (Pittaway and Cope, 2007; Fayolle, 2013; Martin et al., 2013; BIS, 2013; Rideout and Gray, 2013; Nabi et al., 2017). Where such evidence exists, however, the results are generally positive as described below.

Evidence

Several systematic literature reviews have been carried out to explore the impact of enterprise and entrepreneurship education. Key reviews relating to the impact within Higher Education are summarised in Table 1.

All reviews found generally positive relationships between engagement with entrepreneurship education or training and outcomes such as entrepreneurial intent and actual business start-up. As Nabi et al. (2017) concludes, however, impact research predominantly focuses on short-term and subjective outcome measures and tends to severely under describe the actual pedagogies being tested. The latter is particularly important to understand if and why certain interventions are useful in stimulating business start-up or developing enterprising individuals capable of driving innovation within SMEs and larger organisations.

Table 1: Summary of Findings and Suggestions for Future Research from Key Systematic Literature Reviews

Contribution	Main findings	Suggestions for future research
Pittaway and Cope (2007)	<p>Positive impact on student propensity and intentionality towards entrepreneurship</p> <p>Extent of impacts on level of graduate entrepreneurship and whether it enables graduates to become more effective entrepreneurs is unclear</p>	<p>Exploration of links between entrepreneurial propensity and actual behavior and performance</p> <p>Research needs to be more evaluative, longitudinal and contextualized</p>
Martin et al. (2013)	<p>Positive impact on knowledge, skills, positive perceptions of entrepreneurship and intentions to become an entrepreneur</p> <p>Further positive impact on entrepreneurship outcomes in general, start-up, and entrepreneurship performance</p> <p>Academic-focused interventions found to have a significantly stronger relationship with</p>	<p>Exploration of differences in course instructors, such as the skill and/or background of course instructors (e.g. experienced entrepreneur versus academic) and teaching methods employed</p> <p>More methodological rigour required such as include inclusion of pre- and post-education and training interventions (ideally at several points in time post-intervention), and should include treatment and control groups</p>

	entrepreneurship outcomes than training-focused	
Rideout and Gray (2013)	Modest support for effect on entrepreneurial self-efficacy and weak support for effect on entrepreneurial intentions Positive impact on business start-ups and other markers of entrepreneurial success	More methodological rigour required such as use of longitudinal designs, larger sample sizes, psychometrically validated constructs, and reporting and controlling for validity threats (e.g. self-selection, social desirability, and attrition)
BIS (2013)	Acquisition of relevant business-related knowledge, skills and competences; change in attitudes towards risk taking, and intentions towards being self-employed or entrepreneurial Positive relationships with economic impacts including starting a new business, increasing employability and earnings, and contribution to the growth of businesses No evidence of increased likelihood of taking steps towards the development stage of a new business, or using the skills gained to develop new business opportunities in an existing small or large business	Research should explore: <ul style="list-style-type: none"> • Enterprise education in FE as well as HE • Different levels and types of enterprise education (significant component of full-time course, embedded, non-formal) • Pathways which build up knowledge, skills and competences • The links between enterprise and entrepreneurship education, starting and growing SMEs and economic growth Evaluations should be longitudinal, recruit control groups, and test or survey sufficient samples of participants and non-participants
Nabi et al. (2017)	Impact research predominantly focuses on short-term and subjective outcome measures and tends to severely under describe the actual pedagogies being tested Generally positive link with participants' start-up intentions, attitude, perceived feasibility, and skills and knowledge Positive impact on start-up rates and economic contribution	Use of impact indicators related to emotion and mind-set, and intention-to-behavior transition More research on entrepreneurial behavior Greater pedagogical detail needed Exploration of the reasons behind contradictory findings (e.g. background, gender, and culture)

Fayolle et al. (2006) argue that venture creation cannot be measured during or immediately after an entrepreneurship education programme since the venture creation process usually takes time. They note that the more delayed the measurement, the harder it is to isolate the role played by a single factor regarding its impact on a specific outcome such as venture creation. It is also important to consider that HEIs provide training and business start-up support outside the formal curriculum (Smith, 2015).

UK HEIs do collect some graduate start-up data through routinely collected data surveys such as Higher Education Business & Community Interaction survey (HE-BCI; see Table 2 below). For example, 4024 graduate start-ups were reported in 2017/2018 to the HE-BCI survey (HESA, n.d.). Data collection is problematic, however, and more complex and

resourced measures may be needed (BIS, 2013; Smith, 2015). It should be noted that some HEIs that are known to actively support student or graduate business start-up do not currently submit HE-BCI data. Those that do may under report as shown by the discrepancy between businesses starts known to and confirmed by HEIs through HE-BCI, and self-reported business starts identified through other measures such as the Destinations of Leavers from Higher Education (DLHE). There is also some evidence of drop in reported HE-BCI outcomes in periods of uncertainty relating to funding (such as the Higher Education Innovation Fund - HEIF) which can be used by HEIs to support student and graduate business start-up (Smith, 2015).

Table 2: Routinely collected data on entrepreneurial outcomes in UK Universities

Source	Method of data collection	Status	Measures
HE-BCI	University-led submission of verified data relating to graduate spin-outs (start-ups)	Under review	<ol style="list-style-type: none"> 1. Number created 2. Number still active which have survived at least 3 years 3. Number of active firms. 4. Estimated current employment 5. Estimated current turnover 6. Estimated external investment
DLHE last conducted 2016/2017	Self-reported via a national survey with local HEI dissemination and data collection support Conducted six months after graduation	Closed	<p>Question 5: Options to report contract type as 'Self-employed/freelance' or 'Starting up own business'</p> <p>Question 35: How well did the course and any extra-curricular activities (including placements) prepare students for being self-employed/freelance or for starting up their own business</p>
Graduate Outcomes (New DLHE) from 2018/2019	Self-reported via a national survey conducted by a central contractor Conducted eighteen months after graduation	First data to be published Spring 2020	<p>Options to report activities as 'Self-employed/freelancing' or 'Running my own business'</p> <p>Relevant follow questions ask the business name, what the business does, whether the respondent is working on own or has employees, and how the business was funded</p>
LEO	Analyses how much UK graduates of different courses at different universities are earning, one, three or five years since graduating Links up tax, benefits, and student loans data	<p>First data published in 2016</p> <p>Self-employment earnings included in 2017</p>	Graduate earnings including those from self-employment

The recently launched Knowledge Exchange Framework (KEF) will use the HE-BCI reported graduate start-ups rate by student FTE. It was announced in January that full participation in the KEF is likely to become a condition of Research England funding from the academic year 2020/21 (Research England, 2020). This may make graduate start-

up activity and submission of related outcomes more of a priority for HEIs in the future, however, consistency of data collection across HEIs may still be an issue without stronger guidance and support.

Several surveys related to entrepreneurial outcome measures have recently been reviewed or are under review (see Table 2) which may impact on the ability of researchers to explore longer term changes in HEI business start-up support.

A new measure was created in 2016 - Longitudinal Educational Outcomes (LEO), to explore graduate earnings one, three or five years since graduation. This includes earnings from self-employment in 2017 and shows that the percentage in self-employment increases with time after graduation [4.8% one year after graduation (2012/13 cohort); 5.8% three years after graduation (2010/11 cohort); and 6.7% 5 years after graduation (2008/09 cohort); DfE, 2017]. Data from graduates earning a salary from their own business through PAYE is not separated out in LEO reports and the self-employment rate alone is therefore an underestimate of graduate-owned business activity. Earnings through self-employment are substantially lower than those reported through PAYE (DfE, 2017). Indeed, Universities UK has cautioned against use of a LEO-driven funding model as institutions producing entrepreneurial graduates are not rewarded, and they have warned that such a model might restrict growth of small businesses and startups in the arts and creative sectors (Universities UK, 2019).

Overview and evidence gaps

As outlined above, positive effects of enterprise and entrepreneurship education and training have been reported, however, more research is needed to confirm such effects and provide more detailed insights. Evidence gaps have been reported around the emotional aspects of entrepreneurship education and training and the development of the entrepreneurial mindset. More evidence is also needed to explore the transition from entrepreneurial intent stimulated by education and training interventions into actual behaviours such the development of business ideas and move to business start-up. A call for future research to explore the role of instructors has also been made.

Policymakers need to carefully consider and articulate the aims and objectives for entrepreneurship education policy and training initiatives directed at new business creation or the development of entrepreneurial employees, and providers need to design programmes aimed at delivering these. As BIS (2013) notes, the research needed to increase the evidence base requires a financial commitment to shape and support evaluations.

Methodologically rigorous research needs to be carried out to evaluate programmes including use of longitudinal designs, larger sample sizes, psychometrically validated constructs, and reporting and controlling for validity threats. More contextual information needs to be provided on the programme, type of HEI and students, and pedagogical decisions in order to assess the potential of such programmes in similar or different settings.

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About the author



Kelly Smith is a Senior Lecturer in Entrepreneurship in the Department of Management at Birmingham Business School, University of Birmingham. She also holds a PhD from the University of Birmingham. She has lead undergraduate-level Venture Creation Programmes at Coventry University and the University of Huddersfield, and student and graduate entrepreneurship initiatives across the West Midlands and Yorkshire. Her research interests include drivers and barriers to engagement with student and graduate business start-up, and the impact of enterprise and entrepreneurship education. Kelly is the current Co-Chair of ISBE's Enterprise Education conference track, and a founding Co-Chair of the joint ISBE/EEUK Research in Enterprise Education Community of Interest. She is a Fellow and an Honorary Life Fellow of Enterprise Educators UK, the national network of enterprise and entrepreneurship educators in Higher Education. Kelly can be contacted at: k.j.smith@bham.ac.uk.

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