



**Department
for Business
Innovation & Skills**

**ENTERPRISE EDUCATION IMPACT
IN HIGHER EDUCATION AND
FURTHER EDUCATION:**

Final report

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Executive Summary

Entrepreneurship is important for future economic growth. The Government therefore needs to understand what enterprise and entrepreneurship education is in place in Further Education (FE) and Higher Education (HE); what difference it makes to entrepreneurship and the growth of businesses; how could the impact be enhanced; and what difference it can make to the offer and its impact. ICF GHK was commissioned by the Department for Business, Innovation and Skills (BIS) to:

- review and critically assess available international literature on economic impacts of enterprise and entrepreneurship education initiatives aimed at HE and FE;
- carry out a comparative analysis of initiatives (impact, payback, context, transferability); and
- map the landscape of the provision of enterprise and entrepreneurship education initiatives in FE and HE in England.

Method

The study initially defined enterprise and entrepreneurship education and its expected outcomes and impacts in a logic model together with the indicators that would show they had been achieved. A wide literature search identified 155 documents from which 77 were selected for detailed review (see Annex 1). At the same time, provision was mapped from website checks for all HEIs and FE providers, web searches and follow-up interviews. Stakeholders and providers were interviewed.

Evidence of outputs, outcomes and impacts of enterprise education

In relation to outcomes and impacts the literature analysis indicates that:

- participation does lead to students acquiring relevant business related knowledge, skills and competences for enterprise and entrepreneurship;
- participants are more likely to change attitudes, such as risk taking, and intentions, such as around being self-employed or being entrepreneurial, than non-participants;
- studies have mixed results about whether such courses increase students' perception of feasibility; it is greater in Wales where enterprise and entrepreneurship education appears to be more embedded in school and FE than in England;
- there is no evidence that students are more likely to take steps as a result of courses 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;

- there are however positive statistical relationships between various enterprise and entrepreneurship education learning activities in school and tertiary education and economic impacts including starting a new business (strong evidence for entrepreneurship course graduates); increasing employability and earnings; and contributing to the growth of businesses (especially for graduates entering small businesses). These suggest that enterprise and entrepreneurship education is a positive stimulus;
- one study suggests a net positive impact on GVA of enterprise and entrepreneurship education in HE.

As a consequence, while the evidence suggests that enterprise and entrepreneurship education generally has positive benefits that should be expected to lead to some students starting new businesses and making contributions to the growth of existing businesses, for example, the evidence does not conclusively show the attribution of this to enterprise and entrepreneurship education in either FE or HE. However, the effects of enterprise and entrepreneurship education on learners' knowledge, skills and competences and their intentions and ambitions support the evidence from the studies showing statistical relationships between participation in enterprise and entrepreneurship education and economic impacts which have been found.

In relation to effective practice the literature analysis suggests in one study that students who participated in student enterprises report more business related knowledge, skills and competences than students who have participated in enterprise courses; in another study that active content (seminars, simulations, group projects) in enterprise and entrepreneurship education has a more positive effect on students' intentions than non-active learning; and in another study that graduates are more likely to gain knowledge, skills and competences and positive intentions towards starting a new business from their experience in HE from courses and placements; non-graduates only from placements and experience.

As a consequence we can say little about changing practice but the findings support greater availability of enterprise and entrepreneurship education to students, especially for those on vocational courses, and opportunities for practical learning.

Quality of evidence

The assessment of research approaches and methods used in the literature indicate that initiatives in HE are more commonly assessed than in FE. It also shows that:

- course specific evaluations tend to measure immediate outputs (knowledge, skills and competences) and short term outcomes (attitudes and intentions) only. Ambitions and actions (both short and medium term outcomes) are not generally being measured;
- the length and nature of courses and the initiatives undertaken are often not distinguished in studies showing statistical relationships; the GEM 2008 study is an exception;

- comparative analysis is limited because of the paucity of studies of similar initiatives with similar groups and studies of the same initiative in multiple locations to test the significance of context;
- evaluative studies of programmes are hampered by not measuring inputs and describing the activities and participants;
- a few studies measure outputs some using tests (ESCAN and IOEAB), surveys, experiments and qualitative interviews. Many are using case studies without any purposive sampling and appropriate analysis;
- a few studies measure change in intention (planned behaviour) which can indicate whether entrepreneurial actions are likely to follow education and training compared to a control group; one study measures change in effective thinking as a predictor; otherwise few studies measure any outcomes arising from enterprise and entrepreneurship education;
- no studies effectively measure the value and scale of economic impacts; and
- Charney and Libecap's study of the Berger Entrepreneurship Program stresses the value of longitudinal studies and comparative control groups to produce robust results. This demonstrates how a database of alumni networks can enable such studies to be carried out.

As a consequence there is evidence that enterprise and entrepreneurship education initiatives lead to some of the outputs, outcomes and economic impacts that they are expected to generate for students in FE and HE but this cannot be tracked from the education and training provided. There is also not evaluative evidence about the full range of enterprise and entrepreneurship education activities found in FE and HE in England. Nor is there much evaluative evidence which contextualises the nature and extent of the enterprise and entrepreneurship education activities giving rise to the outcomes measured. To be effective in testing the economic impacts and the value of enterprise and entrepreneurship education, evaluations would have to be longitudinal, recruit control groups and test/survey sufficient samples of participants and non-participants.

Extent of provision in FE and HEIs

The mapping has found that formal provision is better established than previous studies have indicated. It can be found in nearly three quarters of HEIs and FE colleges. Around 30% of both FE and HEIs have some formal full courses and around 60% have units in some vocational courses. Few providers have a wide range of departments offering formal learning, the majority only have enterprise and entrepreneurship education offered in Business and Management departments.

Non-formal provision is well established in HEIs (over 60%), less well in FE Colleges (around 30%); around 10% of providers only offer non-formal provision. HEIs appear to benefit more from external funding for non-formal provision than FE colleges. Non-formal learning is very diverse in nature and offered by a large range of 'other' organisations.

Slightly more FE colleges (14%) than HEIs (9%) offer no provision; there is no pattern to provide any explanation. Most units are restricted to learners on full courses within the same faculty.

Practical learning can be found in both HEIs and FE colleges but appears to be more frequently found in FE although passive approaches to learning predominate.

Some providers have highlighted that blockages to increasing availability include gaining 'buy in' because the benefits of enterprise education are not widely understood.

As a consequence while enterprise and entrepreneurship education appears to be strengthening it is not yet widely embedded in the full range of vocational learning where students are likely to be working in SMEs or self employed, since there are many such courses which do not appear to have any embedded enterprise and entrepreneurship education.

Conclusions and next steps

The research appears to support a policy of encouraging and enabling students in FE and HE to participate in enterprise and entrepreneurship education which is both formal and informal learning to provide relevant attributes (knowledge, skills and competences) as well as relevant attitudes and intentions. It suggests that learning by doing (such as projects, placements and learning enterprises) should be included in all enterprise and entrepreneurship education courses since these seem to increase the outcomes and impacts for students, especially those in FE. This may be achieved in non-formal learning but it can also be achieved through embedding this in the curriculum.

Questions remain about whether it should be largely available only to those who are pre-disposed (through their choice of a full qualification or course with enterprise and entrepreneurship education or participation in non-formal learning activities), since not all students are exposed at school or have their intentions firmed up by the time they are in tertiary education. Comparisons with Wales suggest that the Welsh Government's Youth Enterprise Strategy which makes enterprise education an entitlement for every student and is building the capacity to provide enterprise and entrepreneurship education in schools is effective in increasing positive attitudes to entrepreneurial activities.

The gaps in the literature suggest that the priorities for research are studies of:

- enterprise education in FE as well as HE;
- different levels and types of enterprise education (significant component of full-time course, embedded, non-formal) to distinguish and compare outcomes;
- pathways which build up knowledge, skills and competences; and
- the links between enterprise and entrepreneurship education, starting and growing SMEs and economic growth.

While BIS, stakeholders and providers can take some steps to increase the evidence base to meet these priorities, it requires a financial commitment to shape and support evaluations which would have to be longitudinal, recruit control groups and test/survey sufficient samples of participants and non-participants at regular intervals.

As a consequence it is recommended that BIS:

- considers with partners how current research and research funds could be focused on comparative studies of enterprise education and tracking the links between enterprise education and economic outcomes;
- considers how data collection could be enhanced to support this research;
- considers some opportunities to undertake longer term research; and
- develops the scale and scope of a quasi-experimental longitudinal study which could fill gaps in understanding to guide policy and curriculum development in FE and HE.

1 Introduction

In November 2012, ICF GHK was commissioned by the Department for Business, Innovation and Skills (BIS) to conduct the following research:

- review and critically assess available international literature on economic impacts of enterprise and entrepreneurship education initiatives aimed at higher (HE) and further (FE) education;
- carry out a comparative analysis of initiatives (impact, payback, context, transferability); and
- map the landscape of the provision of enterprise and entrepreneurship education initiatives in FE and HE in England.

The research is being commissioned to provide BIS with evidence of the impacts of the economic value of enterprise and entrepreneurship education as well as indicating best practice, any gaps in current provision, and any gaps in the research evidence of impact. This will in turn influence how policies in this area can be made more effective.

This report sets out the findings and conclusions of this research to address the following research questions:

From the literature review:

- what are the types of enterprise and entrepreneurship education initiatives in HE and FE that have been presented in international literature?
- to what extent have these initiatives been assessed or evaluated against programme outputs, learning outcomes, medium outcomes (use of learning) and long-term impacts?
- what methods are used to assess economic and other benefits of enterprise education initiatives? How is the issue of attribution of the education initiative to economic impacts dealt with? What is international best practice in evaluation methodology? Are there examples of innovative evaluation methodologies? Can the methods be applied in England?
- what evidence does international literature present against every stage of the logic model (inputs, outputs, outcomes, impacts)? What influences the range of evidence at each stage?
- what are the economic impacts reported? What factors influence the range of economic impacts reported? Why do certain initiatives have greater impacts than others? What are the significant contextual factors? Does enterprise education in schools make a difference?

- what other benefits of education initiatives are assessed (e.g. acquisition of competencies)? Have they or can they be monetised?
- which initiatives have the greatest impacts or lead to outcomes which are likely to have the desired economic impacts? Do combinations of initiatives work to achieve these? Which could be applied in England if they are not already being applied?
- what are the gaps in the evidence base against the logic model and the provision mapped? What areas would benefit from future research?
- in light of evidence, how should BIS design future enterprise education initiatives in terms of evaluation requirements?

From the mapping:

- what is the scope and scale of enterprise and entrepreneurship education that is provided to young people who are no longer in school?
- where is it provided to young people (institution, organisation, area)?
- what depth of provision is there in FE and HE institutions and how far does it take them on a journey from initial interest to supporting their ambitions to be enterprising and entrepreneurial?

1.1 Background to the study

Entrepreneurs make a considerable contribution to the UK economy and society. New and existing SMEs help drive economic growth by raising competition and stimulating innovation. Those that grow make a disproportionately large contribution to job creation¹.

Entrepreneurs;

- drive efficiency in markets by making incumbent firms compete more keenly for their business and take out of markets those firms who are less productive, therefore increasing aggregate productivity;
- innovate by creating new products and methods of production that more closely align to the needs, tastes and preferences of consumers; and
- create jobs and wealth.

The contribution of entrepreneurship to the European Union's economy has been acknowledged in the Lisbon Strategy (2000-2010)² as well as in the recent Europe 2020

¹ See Anyadike-Danes and Hart (2011) Job Creation and Destruction in the UK: 1998 – 2010, October 2011

² http://europa.eu/scadplus/glossary/lisbon_strategy_en.htm

Strategy.³ Gaining **a sense of initiative and entrepreneurship** is one of the eight key competences for adults⁴ recognised at EU level in the Key Competences Reference Framework.⁵ It is defined as:

'... an individual's ability to turn ideas into action. It includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports individuals, not only in their everyday lives at home and in society, but also in the workplace in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promoting good governance'.⁶

The Government is committed to fostering an entrepreneurial culture as part of its strategy for growth.

While the proportion of the working age population involved in starting or running a business in the UK compares favourably with many of our international competitors, levels of enterprise ambition compare less favourably. Addressing the ambition gap requires early intervention to provide young people with hands-on enterprise experience. Young people with the potential to be successful entrepreneurs may be unaware of the opportunities available to them to start an enterprise or where to access helpful information on how to start or grow a business. Whilst some people may have access to information through family or peer networks involved in running enterprises, others may be unaware of the potential gains from starting an enterprise or the steps they would need to take to do so successfully. This is an information failure, which in the absence of targeted information could lead to society having an inefficiently low number of entrepreneurs. It could also widen social inequalities due to some having access to information on the prospects of becoming an entrepreneur that is not available to others.

The experience of enterprise through education is key to this and helps give people the knowledge and awareness of what it means to run a business and the skills they will need in order to pursue new opportunities. Engaging young people in activities which help increase awareness of entrepreneurship and the realities of running a business are vital to increasing the proportion of those actively starting a business. It also provides the basis for developing a broader set of behaviours, attitudes and qualities, to enable people to become more enterprising employees, able to contribute fully to the business they work for. The Plan for Growth (2011) and the Higher Education White Paper (2011) have identified the key role of tertiary education institutions in providing enterprise and entrepreneurship education.

To this end the government provides funding for a range of enterprise and entrepreneurship education initiatives. Examples include those that have been delivered

³ http://europa.eu/press_room/pdf/complet_en_barroso_007_-_europe_2020_-_en_version.pdf

⁴ A competency is defined by the European Commission as a combination of knowledge, skills and attitudes. Source: Recommendation on Key Competences for Lifelong learning 2006/962/EC.

⁵ Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006H0962:EN:NOT>

⁶ *ibid*

through the National Centre for Entrepreneurship Education (NCEE) and its predecessor (NCGE). Aside from building capacity and strong networks of enterprise champions and teachers, there have been initiatives to increase the range of provision to students, not only through the NCEE, but also via the National Association of College and University Entrepreneurs (NACUE), who work to promote student enterprise societies. Support has also been provided to the Entrepreneurs and Education Programme as it drives forward institutional and student engagement in enterprise.

Young people can develop enterprise and entrepreneurship skills through a variety of means. Young people may be exposed to information and become inspired through engagement in a family enterprise, the activities of their peers as well as through the internet, television and other media. This research focuses exclusively on the knowledge, skills and competences gained through participating in further and higher education; and these can be from formal and non-formal learning. The former would include specific courses and modules which lead to awards and qualifications which are either stand-alone or embedded components in other qualifications; the latter would include facilitated learning to gain such skills in a wide range of practical activities, such as competitions, projects, and work experience placements.

It is therefore important for the Government to understand what enterprise and entrepreneurship education is in place in FE and HE; what is the impact of enterprise and entrepreneurship education in these institutions; how could the impact be enhanced; and what difference it can make to the offer and its impact. The research findings will contribute to the development of the enterprise education agenda and have the potential to influence future Government policy and strategy.

1.2 Approach to this study

For both the assessment of the research and mapping it was important to establish a definition of enterprise and entrepreneurship education and the beneficiaries in scope and to develop a logic model presenting the expected outcomes and impacts of such education and their related indicators. These are outlined and followed by a brief description of the approach to identifying and exploiting the international literature and the mapping and analysis of FE and HE provision in England.

1.2.1 Defining the parameters of the study

In broad terms the literature and provision of learning in scope was defined as:

- learning for young people aged approximately 16-24 who are likely to enter the labour market on the completion of their education who are studying in FE and HE institutions;
- enterprise education (i.e., the teaching of entrepreneurial skills, attitudes and competences, enterprise culture and an entrepreneurial mind-set) as described in Box 1 below;
- entrepreneurship education (i.e., the teaching of skills, attitudes and competences required to establish a business) as described in Box 1 below;

- standalone provision which could be both formal and non-formal; non-formal can include university societies, charity or corporate/private sector-led initiatives as well as self-organised provision in FE and HE institutions;
- embedded provision, both formal and non-formal; the formal may include modules in a vocational qualification; non-formal could be projects or work placements.

Box 1 Definitions of enterprise and entrepreneurship education⁷

Enterprise education is the application of creative ideas and innovations to practical situations –with enterprise education aiming to produce individuals with the mindset and skills to respond to opportunities, needs and shortfalls, with key skills including taking the initiative, decision making, problem solving, networking, identifying opportunities and personal effectiveness. Enterprise provision can be applied to all areas of education, extending beyond knowledge acquisition to a wide range of emotional, social, and practical skills; and

Entrepreneurship education is the application of enterprise skills specifically to the creation and growth of organisations, with entrepreneurship education focusing on developing skills and applying an enterprising mindset in the specific contexts of setting up a new venture, developing and growing an existing business, or designing an entrepreneurial organisation.

As a consequence, it does not include:

- awareness-raising about enterprise and entrepreneurship opportunities;
- learning in schools, unless the evidence of impact would be applicable, transferable or scalable to young people in FE or HE;
- mentoring and business support to young people in the process of establishing businesses;
- up-skilling or re-skilling provision for adults in FE and HE (for example as part of continuing education programmes or training for unemployed adults); and
- learning to obtain foundation core skills which are needed for any form of employment: numeracy, literacy, personal and social skills.

⁷ The Quality Assurance Agency for Higher Education (QAA) guidance on enterprise and entrepreneurship provision⁷ draws the distinction set out in the box below. See http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/EE_Draft_Guidance.pdf ; OECD (2010) Ministerial report on the OECD innovation strategy; and OECD (2009) Evaluation of programmes concerning education for entrepreneurship: Report of the OECD Working Party on SMEs and Entrepreneurship; DG Enterprise and Industry website, http://ec.europa.eu/enterprise/policies/sme/promoting-entrepreneurship/education-training-entrepreneurship/index_en.htm

Nor does it include capacity building activities to improve the quality of enterprise and entrepreneurship education through training, coaching and materials for teachers.⁸

1.2.2 Logic model for evidence review

In developing a theory of change for enterprise and entrepreneurship education the starting point was adopting the Kirkpatrick Model for evaluating training.⁹

As a first principle we must assume that there is a gain from education and training in enterprise and entrepreneurship. This has broadly three purposes in line with the definition above:

- encourages behaviours and attitudes, the mindset, for developing a positive view of entrepreneurship and enterprise;
- provides the foundation skills for starting a business including financial literacy¹⁰; and
- provides practical experience of entrepreneurial activity to instil the skills and attitudes needed.

As a second principle education and training in FE and HE with its focus on potential new entrants to the labour market can be expected to:

- increase young people's knowledge, skills and competences;
- change awareness and attitudes, values and behaviours;
- influence steps towards jobs and employers; and
- enable first steps to gaining a living.

As a consequence we must expect enterprise and entrepreneurship training:

- to have soft outcomes, such as confidence to take steps towards starting a business or having an increased desire for education, self-employment and feeling more creative, adaptable and motivated, as well as hard outcomes, such as improved results, participating in early stage entrepreneurial activity and using the competences gained in jobs gained;

⁸ The NCEE evaluation however has been examined because it provides a method for assessing outcomes.

⁹ The Kirkpatrick model provides four levels of outcomes to distinguish what are generally considered to be immediate, short term, intermediate and longer term outcomes and impacts expected from training in a chronological sequence. As with the HGT project, the expectation is that participants should initially increase their knowledge and understanding, then identify where they could apply this if appropriate, take action and finally see benefits to their organisation when the action has been taken and implemented. See [http://businessballs.com/humanresources/kirkpatrick's learning and training evaluation theory](http://businessballs.com/humanresources/kirkpatrick's%20learning%20and%20training%20evaluation%20theory)

¹⁰ This distinction is made by OECD because the fundamental core skills should be mainstreamed in the curriculum. OECD (2009) Evaluation of programmes concerning education for entrepreneurship: Report of the OECD Working Party on SMEs and Entrepreneurship.

- to contribute to an attributable net impact on economic growth through new businesses and new jobs created and improved rates of business growth and survival, for example, but not be the only factor because setting up a business successfully is dependent on a range of other factors; and
- to have an effect on young people's roles and work in paid employment within both large and small businesses where they could be developing new products and business opportunities.

The logic model developed from these assumptions to assist with analysing the literature and the mapping can be found on the next page (Figure 1). In the table, underneath the model's outputs, outcomes and impacts, we set out the indicators we shall be looking for in the literature as evidence of the positive effects of enterprise and entrepreneurship education and training which reflect the logic model's outputs and outcomes. These are a mix of indicators of awareness, attitudes, intentions and actions.¹¹

We would expect that strong evidence of outcomes and impacts from the international research:

- will use qualitative as well as quantitative evidence;
- will show the attributable links between short term outcomes which may be soft outcomes and hard medium term outcomes. This will strengthen the case for initiatives which can achieve short term outcomes;
- compares the characteristics of participants with non-participants at later stages; and
- shows that medium term outcomes are linked to the education and training and not other factors, such as pursuing self-employment for positive reasons not out of necessity.

1.2.3 International literature review of evidence

We anticipated that the literature would be fragmented across a wide range of sources (academic, grey, official), and include different types of study (academic, programme evaluation) and approaches, with varying degrees of empirical and methodological robustness.

To ensure the initial inclusion of a wide range of sources and perspectives we adopted the search strategy in Table 1 below. This used a 'snowballing' technique, in which the reviewer is pointed in the direction of potentially informative work from the references section of work under review and did not initially use strict quality criteria in the selection process.

¹¹ This draws on GHK's report for the European Commission Study on Support to indicators on entrepreneurship education (DGEAC, 2011) which assessed the literature and 10 case study countries' initiatives. These reflect the Kirkpatrick model and the approach of the Global Entrepreneurship Monitor (2010)

Table 1: Search strategy and inclusion parameters for identifying literature sources

<p>Time period</p> <p>The study, while not being specifically constrained by any particular dates, focuses on recent literature since 2001. Older seminal papers have been included, for example from the USA, since their findings should still be robust.</p>
<p>Language and geographic scope</p> <p>Assessments of enterprise education initiatives in countries at the same stage of economic development as the UK are the key focus of this search. Database searches to be conducted in English, French and German with sources in other major European languages to be included in the review where these are identified. Emphasis to be placed on sources from the USA (where enterprise education has a longer history), Scandinavia (where there is experience in metrics) and international comparative studies (such as from the OECD or GEM). Applicability of evidence on impact will be assessed during the literature analysis. It is anticipated that evidence of impact in countries at a different stage of development to England may not be comparable to the English context, however the assessment methodology used in such studies may offer valuable learning.</p>
<p>Impacts and types of impact</p> <p>The focus is on studies that demonstrate impacts attributable to the education initiative, such as monetary returns from business creation, job creation and intrapreneurial attitudes (innovation and creativity within an existing business). As it was predicted that the number of studies demonstrating such impacts will be low, studies providing evidence of other earlier stages of the logic model (achievement of short and medium term outputs) have also been included. The full range of these is set out in the logic model. The following have been excluded: descriptions of enterprise and entrepreneurship education initiatives and collections of case studies, think pieces about provision including pedagogies, and surveys about enterprise and entrepreneurship attitudes and intentions without any indication of the role of enterprise and entrepreneurship education.</p>
<p>Types of education initiatives</p> <p>Focus on enterprise and entrepreneurship education targeted at higher and further education students, broadly within the age group 16 to 24. It does not focus on programmes at schools, with the unemployed, knowledge transfer hubs or partnerships, MBA programmes, continuous professional development programmes or other (e.g. extramural) university programmes clearly aimed at adults with prior experience in the workplace. Initiatives in the above categories may only be included if they offer good examples of economic impact evaluations. The study also does not include initiatives that only offer support for existing start-ups (such as mentoring or provision of workspaces and loans).</p>
<p>Scale of education initiatives</p> <p>Entrepreneurial skills and attitudes provide benefits to society beyond their application to business activity. Therefore, the focus is on education which develops entrepreneurial mindsets, i.e. the willingness and capacity to turn ideas into practice, supported by the necessary skills. Therefore, general economic or business courses that do not include this specific element will not be considered as 'entrepreneurship education' and have thus been excluded from the scope of this research.</p>

Specified key words

Key words will be developed to reflect the review questions specified and the full range of types of initiative and programme within scope. *Boolean* terms will be used.

Indications of possible key word combinations are.

Combinations of “enterpr*” OR “entrepreneur*” OR “educ*” OR “university*” OR “college” OR “further ed*” OR “vocational education” OR “student*” OR “business ed*”
AND:

- “training” OR “traineeship” OR “education” OR “skills”
- “economic impact assessment”; “impact evaluation”; “assessment”; “programme evaluation”; “project evaluation”; “policy evaluation”; OR
- “economic impact”, “social impact”, “economic benefits”; “academic benefits”; OR
- “effectiveness” “efficiency”; “cost effectiveness”; “benefits”; “competencies”

Literature sources

These will include:

- Desk searches of EBSCO Host databases, including EconLit with full text, Business Source Complete and Education Research Complete, to identify peer-reviewed journal articles, book chapters and non-peer reviewed academic research
- National level research identified by consulting the work of key research procurers such as the OECD, World Economic Forum, the European Commission (DG Enterprise and DG Education), Global Entrepreneurship Monitor (GEM) and the Kauffman Foundation (USA).
- Grey literature of international sources identified by the ICF GHK team, BIS and material provided by the HE & FE Enterprise Expert Group will also be incorporated into the evidence review. This includes Regional Development Agency impact assessments, evaluations of national, local, regional or institutional-level programmes and other evidence provided by the Expert Group (e.g. career office tracking data).

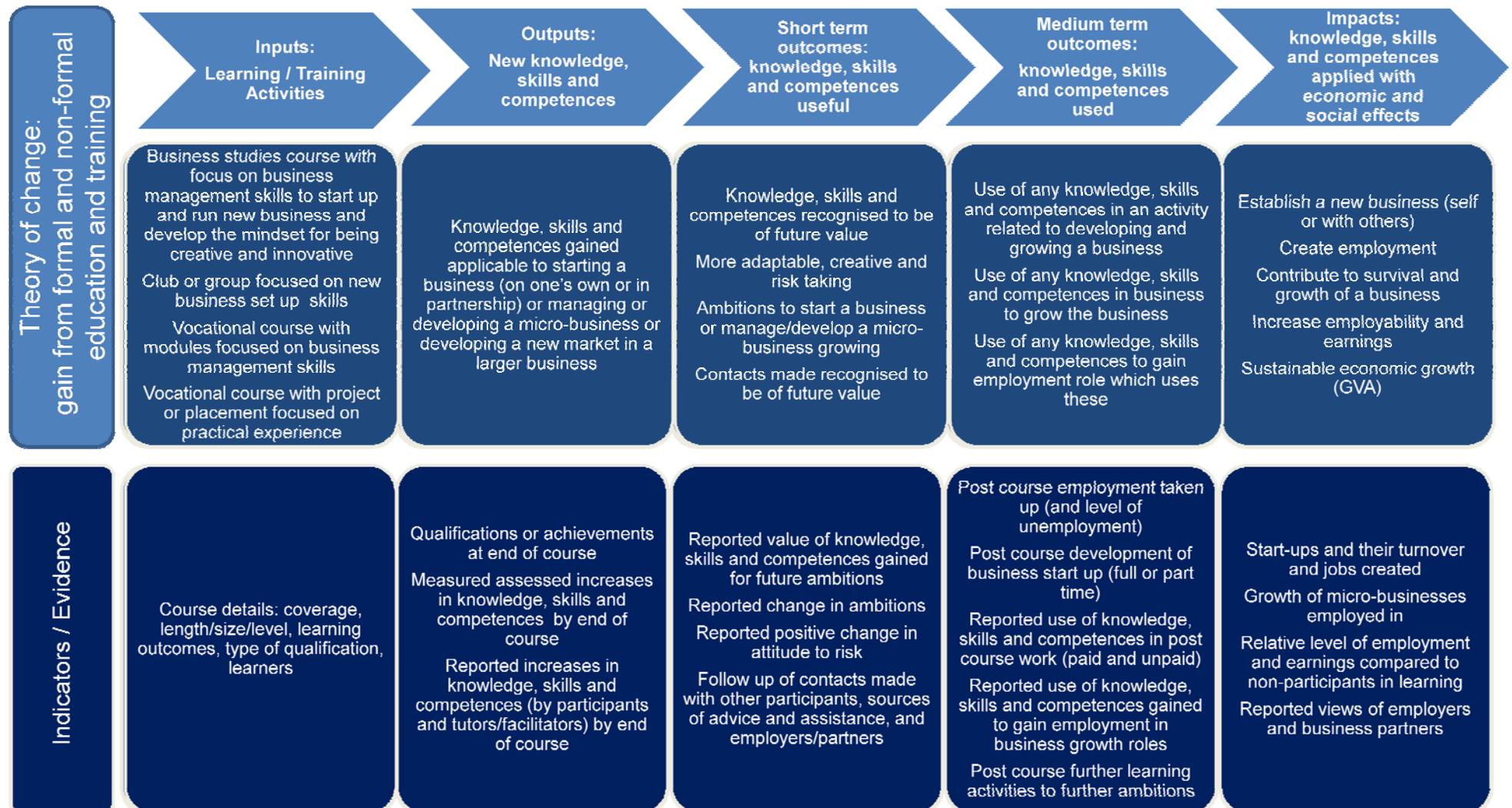
Consultation

Stakeholder consultations will fulfil two key purposes: to provide further review material (e.g. grey literature), and offer verbal and expert evidence, assessment and viewpoints on the key issues related to the review questions.

This process identified 168 relevant pieces of literature of which 155 could be reviewed for inclusion in the analysis. From these 77 documents/sources were selected for review by applying tests of originality, focus on education and training defined above, evidence of outputs, outcomes and impacts, and appropriate research methods. The full list of these can be found in Annex 1. For each of these a data extraction form was completed to draw out information of relevance to the research questions for this study. This can be found in Annex 2.

In broad terms the relevant literature included in the study covers both FE and HE and a wide variety of education and training, draws on European as well as North American experience, and provides qualitative and quantitative evidence of outcomes and to a limited extent, as was expected, of economic impacts.

Figure 1: Logic Model: Student Participation in Enterprise and Entrepreneurial Education



1.2.4 Mapping provision of enterprise and entrepreneurship education

As a starting point to identify provision in FE and HE institutions we searched the websites of every FE and HE¹² institution and undertook web searches using the same search terms as for the literature review. The web searches identified additional providers (private and third sector) and additional provision in FE and HE institutions.

This was initially supplemented by:

- information provided by some of the funders of non-formal activities they support in FE colleges and HEIs. In some cases this added to the provision identified from web searches and in some cases it led to the removal of activities which had ceased to be funded a while ago; and
- check ups with key stakeholders and their members (NACUE, EEUK, NCEE) if there was no website evidence of any provision in their institution.

This was added to in order to gain more in depth information about provision and to ensure it reflected the definitions set out in section 1.2.1 above through:

- over 30 follow-up telephone conversations with providers to clarify their provision; and
- checks of prospectuses and qualification descriptions.

The structure of the mapping database is presented in Annex 3.

In broad terms the mapping describes what is currently available from documentary evidence for different groups of young people. The mapping study was expected to underreport the level of enterprise and entrepreneurship education activity in HEIs and FE colleges because it would not necessarily identify modules and units embedded in some vocational courses and some providers would not have up to date published information. This was confirmed by the additional telephone interviews (see 1.2.5 below and Annex 5) although the extent of underreporting is not likely to be large.

1.2.5 Additional provider telephone interviews

Following the initial mapping, additional interviews were conducted with a sample of 12 HE and 12 FE providers which according to the initial mapping offered different levels of enterprise and entrepreneurship education provision. The list of those interviewed and the topic guide can be found in Annex 6.

¹² <http://www.ucas.com/students/choosingcourses/choosinguni/map/>,
<http://www.hefce.ac.uk/whatwedo/invest/unicoll/highereducationinstitutions/>,
http://www.aoc.co.uk/en/about_colleges/index.cfm

The purpose of these interviews was to:

- confirm and test the depth and breadth of provision that the mapping suggested; establish the scale of any limitation/missing information which cannot be assessed systematically from supplementary calls to providers;
- gain provider perspectives on the rationale of their provision in terms of supply (e.g. funding, teaching expertise, facilities) and demand factors (learners, priorities/fit with other learning offers to undergraduates and post graduates and income generation from research such as incubators and spin-offs);
- gain provider perspectives on gaps and needs to increase supply, effectiveness and outcomes from enterprise education; and
- explore the practicality and cost of measuring the wider benefits and outcomes of enterprise education.

1.2.6 Stakeholder interviews

We interviewed representatives of 14 stakeholder organisations with an interest in enterprise and entrepreneurship education provision in FE and HE about the evidence base and its relationship to the nature of provision in England. The list of those interviewed and the topic guide can be found in Annex 4. This helped to contextualise the study and check perceptions of the international evidence base and what it means for the supply of entrepreneurship education. The findings have been incorporated in chapters 2, 3 and 4.

1.2.7 Limitations in relation to key questions for the study

While the research commissioned has been completed, a few of the questions for analysis cannot be fully addressed. These are whether:

- there are approaches elsewhere which could be considered for adoption in England because they have better outcomes;
- some approaches have higher economic impacts than others;
- enterprise education in schools provides benefits to enterprise education in FE and HE.

The reasons for this are set out in chapters 2 and 3.

1.3 Report structure

The rest of the report is structured as follows:

- Chapter 2 provides a summary of the evidence of impact in the international literature;
- Chapter 3 assesses the quality of the evidence base in the literature;

- Chapter 4 provides the mapping and analysis of provision ; and
- Chapter 5 sets out the conclusions drawn around the key research questions and recommendations to inform future policy.

2 Evidence from the international literature

In this chapter we assess the selected literature to identify to what extent there is evidence that examples of enterprise and entrepreneurship education produce any of the outputs, outcomes and impacts in the logic model. Where possible we draw out the scale of effects and any comparisons between different initiatives and contexts.

2.1 Outcomes and impacts

2.1.1 Measurable outputs



There is evidence that participation in enterprise and entrepreneurship education initiatives leads to the acquisition of knowledge, skills, and competences related to starting a business, managing a business or developing a small business.

This is evident in several examples for HE students who have undertaken undergraduate entrepreneurship courses, as well as some evidence that other types of enterprise and entrepreneurship education, such as participation in student enterprise clubs and societies leads to acquisitions of knowledge, skills and competences.

A survey of students who had taken entrepreneurship courses (of different types and lengths) at universities in the USA (Summit Consulting, 2009) demonstrated a positive relationship between enterprise and entrepreneurship education and respondents' knowledge, skills and competences. These included their:

- ability to identify new business related opportunities (such as new products or services people need, but that are not currently available, or a more effective way of producing or running an organization);
- knowledge of resources necessary to take advantage of a new business-related opportunity (such as financial resources or expertise);
- ability to design a strategy to direct efforts to develop a new business-related opportunity (such as creation of a business plan); and
- ability to develop a new entity to take advantage of new business-related opportunities (for example, a team or organisation devoted to the new opportunity).

The researchers tested these results using a simple regression model to control for the eventuality that respondents had gained self-confidence in these skills through other means, such as previous work experience in an enterprising organisation or through their

own start-up. The results showed that participation in enterprise and entrepreneurship education at HE can significantly explain high self-confidence in these business-related skills.

Von Graevenitz et al (2010) found that university undergraduates in Germany who had participated in a compulsory course as part of their business degree demonstrated a (statistically significant) increase in their general self-confidence and skills in business planning.

DeTienne and Chandler (2004) used an experimental methodology to assess whether a group of undergraduates in the USA would acquire the competence of “opportunity identification” through enterprise education (in particular a series of idea-enhancing exercises aimed to boost creativity and opportunity identification). The study found that the training, controlling for socio-demographic variables, had a positive effect in students’ abilities to creatively generate business ideas.

A survey of alumni of nine European enterprise courses compared graduates’ self-perception of their skills, knowledge and attitudes against alumni of student enterprise programmes which are members of the European Confederation of Junior Enterprises (JADE¹³) and a control group of alumni who did not participate in either (European Commission, 2012). Junior Enterprise alumni reported the highest scores on almost all skill categories, as shown in the table below.

Table 2: Scores of self-perception of Key Entrepreneurship Competence by entrepreneurship alumni, Junior Enterprise alumni and control group alumni, EIM Survey 2011 for the European Commission – DG Enterprise

Skill or Competency	Entrepreneurship Alumni	Junior Enterprise alumni	Control group alumni
Skills			
Creativity	**	**	*
Analysis	**	***	*
Motivation	**	***	*
Networking	**	***	*
Adaptability	**	***	*
Knowledge			
Understanding role of entrepreneur	***	**	*
Knowledge of entrepreneurship	**	***	*

*** highest ** medium * lowest

¹³ <http://www.jadenet.org>

Source: European Commission (2012). *Effects and impact of entrepreneurship programmes in Higher Education, European Commission - DG Enterprise and Industry by EIM Business & Policy Research (the Netherlands)*

The link between participation in student enterprise programmes and perception of acquisition of business related competences or skills is also supported by evidence from a survey of 145 Young Enterprise alumni of both their school and HE programmes¹⁴, who are now business owners in the UK (Young Enterprise, 2012). They were asked to rate the impact of their participation in Young Enterprise on business knowledge or skills (1= low impact, 5 = high impact). The table below shows the mean scores awarded to each skill.

Table 3: Young Enterprise Business owners' perception of value of Young Enterprise programmes

Business Knowledge or Skill	Mean Score
Improved my ability to cope with problems	3.81
Business planning/strategy	3.75
Researching and evaluating ideas	3.69
Improved my ability to achieve my objectives	3.63
Improved my ability to cope with change	3.6
Innovation / new product / service development	3.54
Building business relations and networks	3.53
Opportunity identification	3.51
Business start-up	3.5
Marketing research and analysis	3.15
Marketing and selling	3.06
Intellectual property	2.61
Trading internationally	2.04

Source: Young Enterprise (2012), *Impact: 50 Years of Young Enterprise, Kingston University study into the effectiveness of the UK's leading enterprise education charity*

Little research has examined whether participation in student entrepreneurship clubs and societies increases appropriate knowledge, skills and competences. Pittaway et al (2010) investigated some of the benefits of learning from these through a small qualitative survey (telephone interviews and email postcard survey) of students participating in such societies in the UK and the USA. Students reported that clubs and societies enable 'learning by doing' through action and subsequent experience gained (reported by 35% of students). There is also some evidence showing that participation in these activities leads

¹⁴ Young Enterprise offers the Young Enterprise Company programme for students in secondary school and the Graduate Enterprise programme (now called Start Up). Of the alumni surveyed, 67% identified participating in the Young Enterprise Company programme and 18% identified participating in the Graduate Enterprising programme. This suggests that at least 85% of survey respondents recall participating in enterprise education between the ages of 15 and 25.

to learning through reflection, i.e. observing and reflecting on their own or others' prior actions (16% of students). Social learning through networking is an important component of learning gained (14% of the data set). There is less evidence to support the view that entrepreneurship education, in clubs and societies, can stimulate learning through mistakes (4% only reported such a benefit). The study did not assess the skills and competences gained or the students' achievements.

We have identified no studies or other material offering evidence about full-time enterprise and entrepreneurship courses and whether they have greater effects on business management skills than short courses or modules; and no evidence of the effects of vocational courses with embedded modules on business management skills.

2.1.2 Short term outcomes

Short term outcomes: knowledge, skills and competences useful

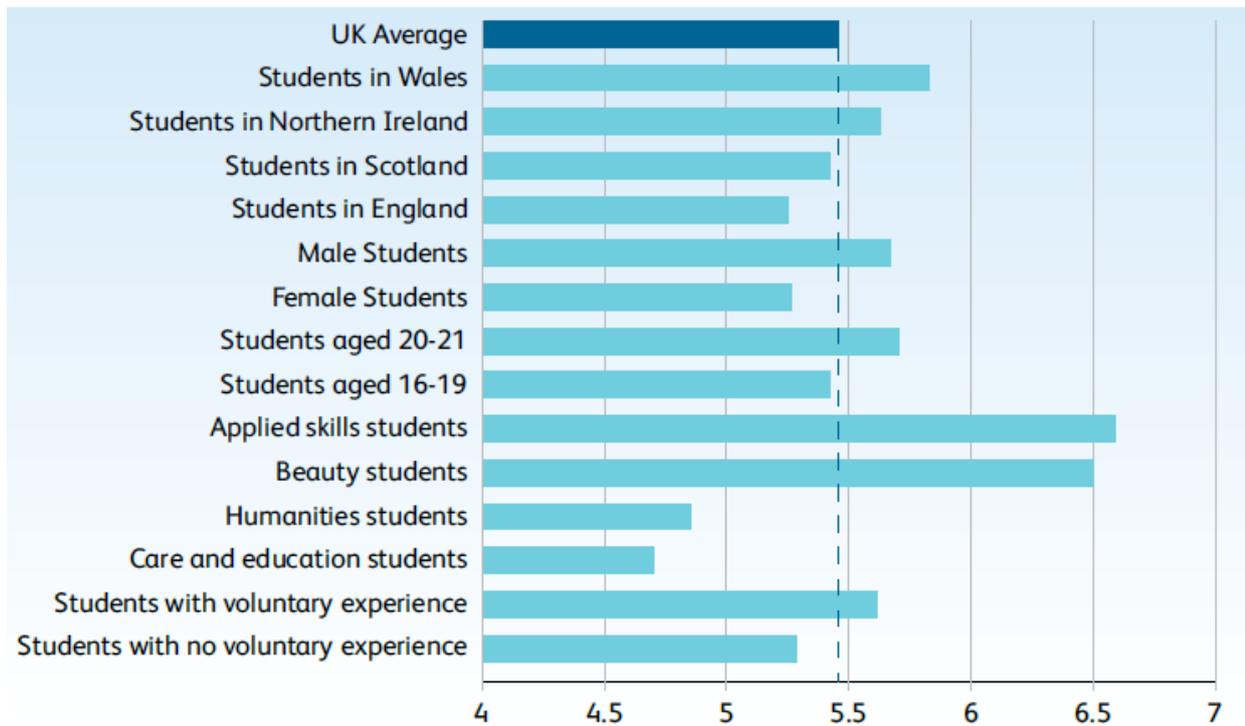
Knowledge, skills and competences recognised to be of future value
More adaptable, creative and risk taking
Ambitions to start a business or manage/develop a micro-business growing
Contacts made recognised to be of future value

Some studies of :
reported value of knowledge, skills and competences gained which would enable progress towards start up ambitions
reported change in ambitions
reported positive change in attitude to risk

There is some evidence that enterprise and entrepreneurship education leads to changes in entrepreneurial attitudes (such as risk taking and need for achievement), changes in perceptions of the desirability of a career as an entrepreneur or being self-employed, changes in perceptions of what others think of entrepreneurs, perceptions of feasibility of starting a business and of self-efficacy (self-reported competency to achieve a task) towards entrepreneurship.

Some comparisons have been drawn between students who have participated in enterprise and entrepreneurship learning and those who have not.

The Carnegie UK survey of 1,600 FE students (Metcalf, 2012) compared Welsh and English students to consider if the Welsh Government strategy of embedding enterprise and entrepreneurship education in the college and school curriculum had led to young people demonstrating more positive attitudes towards entrepreneurship. The study found that, compared to other home nations, Welsh students were more positive of a future career in enterprise or self-employment as shown in the Figure 2 below. Students in England scored the lowest of all the home nations. This study measures attitudes at a single point in time.

Figure 2: Carnegie Measure of Student Attitudes to Enterprise, FE Students, 2012

Score key: 0 = no interest whatsoever in business, 10 = very high likelihood of starting up a business or being self-employed, Source: Metcalf, J. (2012), *Enterprising Minds, Enterprise, further education and the UK economy*, Carnegie Trust UK

Wilson et al (2007) surveyed 933 MBA students across a range of business schools in the USA and compared results for those who had undertaken entrepreneurship modules against those who did not. They found that those who had, had significantly higher self-efficacy (greater self-confidence in their own skills for entrepreneurship). This study does not control intention and attitudes prior to participation: it may be the case that those with higher self-confidence chose to take the courses while those with less did not. The study also tested whether the strength of the relationship was different for male and female students and found that the effect of enterprise and entrepreneurship education on women MBA students was substantially higher than for men.

Several studies have measured these changes in students using before and after questionnaires (which tested changes in entrepreneurial attitudes) and, in some cases, through the use of a control group. They have combined scores on variables and determined, based on Ajzen's theory of planned behaviour (see section 3.2.3), student's intentions towards becoming entrepreneurs.

Some key studies on HE and FE are summarised below, together with one which concerns a school-level initiative for those aged 15-18 that compares the participants in an initiative with a control group (Peterman and Kennedy 2003).¹⁵

Broadly these show that short courses and modules have a positive effect on ambitions and intentions. Fayolle et al (2010) suggest that this impact may be temporary while Barakat et al (2010) find evidence that the impact is sustained over time. Longer more intensive modules are likely to have a wider range of outcomes which may be related to course delivery, university context, self-selection and prior perceptions of entrepreneurship. For example, the group of students studied by Von Graevenitz et al (2010) demonstrated on average a reduction in intention to be entrepreneurs in the future, due to a number of students demonstrating movement from a neutral response to a negative response. The authors suggest that the effect of the programme was to enable students to firm up their views about entrepreneurship: enabling a number of those to decide that it is not for them.

¹⁵ There is also evidence that EE at other primary and secondary school levels lead similar to changes in attitudes, intentions (such as Hubet et al 2012, Nakkuna et al 2004, Lepoutre et al 2010, Danish Foundation for Entrepreneurship 2012)

Table 4: Studies Assessing Changes in Attitudes and Intentions

Study name	Activity	Method	Results
V Souitaris, S Zerbinati, A Al-Laham (2007) Do entrepreneurship programmes raise the entrepreneurial intention of science and engineering students?	Entrepreneurship programmes for science and engineering students, HEs in France and England	Pre-course and post-course questionnaire, control group quasi-experimental design	Students in the programme group had raised attitudes towards entrepreneurship and intentions to become self-employed; control group showed no change. "Inspired" students did not plan to start a new venture immediately but were positive about doing so later in their careers.
Barakat, S., McLennan, R., Ihasz, O., Winfield, S. and Vyakarnam, S. (2010) "Same programme, different students: same or different self-efficacy effects?" In: Looking to the future: economic and social regeneration through entrepreneurial activity: Institute of Small Business and Entrepreneurship Conference (33rd), 2-4 November 2010, London, UK	Enterprisers programme at the University of Cambridge: Four day intensive programme aimed at postgraduates (mean age 28.9) with little or no entrepreneurial experience	Pre-course and post-course questionnaire and 6 months follow-up questionnaire	After the programme, students showed higher self-efficacy for entrepreneurship. Positive effect sustained 6-months after programme. Mathematicians, scientists and engineers scored higher than arts, humanities and social sciences students. Men scored higher than women on some measures. British students' scores improved more than overseas' students after the course.
Peterman, N. And J. Kennedy (2003), Enterprise Education: Influencing Students' Perceptions of Entrepreneurship. Entrepreneurship	Young Enterprise-type programme, secondary schools in Australia, ages 15	Pre-course and post course questionnaire Comparison with	Following participation, participants showed a significant increase in perceptions of both desirability and feasibility for entrepreneurship among

Study name	Activity	Method	Results
Theory and Practice, 2003, 28 (2), 129_144.	to 18	control group (students from the same school who chose not to participate in the programme)	participants. In the control group, over the same time period there was no significant change in the perceptions of desirability; perceptions of feasibility declined.
Oosterbeek et al (2008). The Impact of Entrepreneurship Education on Entrepreneurship Competencies and Intentions: An Evaluation of the Junior Achievement Student Mini-Company Program.	Young Enterprise type programme (year long, 10 ECTS credits) in vocational (FE) college in the Netherlands	Pre-course and post course questionnaire (additional questions to Escan competencies questionnaire described section 3.2.2 below); comparison with control group	Negative impact on entrepreneurial intentions
von Graevenitz, G., Harhoff, D., & Weber, R. (2010). The Effects of Entrepreneurship Education. Journal Of Economic Behavior And Organization	Compulsory enterprise unit for business studies undergraduates, Germany	Pre-course and post-course questionnaire	As a group, students were less likely to agree with a statement demonstrating intention to start a business within 5 to 10 years. Decline in neutral responses: course enabled students to firm their views towards starting a business
Fayolle Alain, Gailly Benoit (2009) Evaluation d'une formation en entrepreneuriat: predispositions et impact sur l'esprit d'entreprendre	Short mandatory training programme including theoretical training and 2/3 training time devoted to 'learning by doing' , MBA students, France	Pre-course, post-course questionnaire and 6 month follow-up	Small positive impact of intention immediately after participation – impact not significantly large after six months. Effect is the strongest for those who initially had a low level of intention to launch their own business; negative effect for those initially most interested

Study name	Activity	Method	Results
			in becoming entrepreneurs.
Fayolle, Alain; Gailly, Benoît; Lassas-Clerc, Narjisse (2006) Assessing the impact of entrepreneurship education programmes: a new methodology	One day enterprise education course for engineering students at a French university	Pre-course and post-course questionnaire	<p>Strong measureable impact on the entrepreneurial intention of students; positive, not very significant, impact on their perceived behavioural control.</p> <p>Increased confidence that they could be entrepreneurs in the future.</p> <p>Increase in concern about risk involved in setting up a business.</p>
Aouni Z, Pirnay, F (2009) L'impact de l'exposition à des modèles d'entrepreneurs sur les antécédents de l'intention entrepreneuriale	Workshops and conference based on presentations from successful entrepreneurs "role models", aimed at young people (not just in HE or FE), Belgium	Pre and post intervention questionnaire, control group	<p>Initial low interest in entrepreneurship: Positive change on ambition, no impact on perception of feasibility to start a business</p> <p>Initial high interest in entrepreneurship: Negative change in ambition, No impact on perception of feasibility</p>
APCE (Agence pour la Creation d'Entreprise), Observatoire des pratiques pédagogiques en entrepreneuriat) (2011) Le développement de l'esprit d'entreprendre dans le système éducatif français	Enterprise and entrepreneurship education in HE in France (part of review and mapping of enterprise and entrepreneurship education across all education levels in France)	Semi-structured interviews with 33 undergraduates participating in EE (various types at university)	<p>Students with high pre-course intentions to start a business were inspired by enterprise and entrepreneurship education and reported higher intentions to do in the future</p> <p>Students with low pre-course intentions to start a business reported further reduction in their intention to become an entrepreneur in the future</p>
Dunchev (2012), Measuring The	Stand-alone	Experimental: before	Sufficient evidence to argue that course

Study name	Activity	Method	Results
Impact Of Entrepreneurship Education At Aarhus School Of Business And Social Sciences, MSc thesis, Aarhus Business School, Denmark	Entrepreneurship course for Business School students	and after “Think out Loud” observation and assessment of creativity using Lego, only five observations	participants made considerable progress towards experimental mindset or “effectual thinking” (explained further in 3.2.3)

There is no evidence from the studies reviewed about full enterprise and entrepreneurship courses regarding whether they have greater effects on attitudes and ambitions than short courses or modules, nor about any short term outcomes arising from informal learning in clubs and groups. None of the studies identify short term actions arising such as following up contacts, seeking advice and making contacts with appropriate employers (first steps).

2.1.3 Medium term outcomes

Medium term outcomes:
knowledge, skills and competences used

Use of any knowledge, skills and competences in an activity related to developing and growing a business

Use of any knowledge, skills and competences in business to grow the business

Use of any knowledge, skills and competences to gain employment role which uses these

Post course employment taken up (and level of unemployment)

Post course development of business start up (full or part time)

Reported use of knowledge, skills and competences in post course work (paid and unpaid)

Reported use of knowledge, skills and competences gained to gain employment in business growth roles

Post course further learning activities to further ambitions

There are a few studies that show evidence of a link between participation in enterprise and entrepreneurship education and increasing likelihood to take steps to develop/start a business, grow a business or gain employment after gaining knowledge, skills and competences from enterprise and entrepreneurship education while in FE or HE.

Matlay and Westhead (2006) found a statistical relationship between participating on the Shell Technology Enterprise Programme (STEP) initiative which offered undergraduates work experience in SMEs and their employability and employment three years after the programme (in 1997). Typically, the participants undertook an eight week placement with an SME during the summer vacation of a student's second year. The programme aimed to ensure that the placement provided a "meaningful" experience for the student: such as a specific task-oriented assignment or an opportunity to apply classroom-learned business solutions to a real-life workplace problem faced by the SME. The programme also encouraged the development of interpersonal and communication skills.

By comparing results with a control group, the study found that a slightly larger proportion of STEP, compared to non-STEP students, had obtained full-time employment positions (82% compared to 76%). Graduates were also asked what skills helped them obtain a full-time job. A

significantly larger proportion of STEP graduates were likely to say that computer literacy, project management skills, business sense and/or practical business skill helped them obtain a full-time position – developing these skills was a specific objective of the STEP programme. STEP graduates were also more likely to be employed in small private businesses (17%) compared to 11% of non-STEP graduates. Multivariate analyses supported these conclusions while controlling for the gender, ethnic background and age of participants.

Matlay's (2008) longitudinal tracking of 64 graduates with entrepreneurial ambitions from eight HEIs in the UK over a 10 year period finds positive reported effects of enterprise education and post-university employment and business growth. As these graduates all expressed prior interest in becoming entrepreneurs, all became self-employed or owners of businesses. Over the ten year period (1997 to 2006), none of the graduates experienced any period of unemployment and none acquired employee status. Several moved rapidly from self-employed to owners of micro or small businesses through to being owners or partners of larger businesses. Furthermore, none experienced any business failures and few experienced business problems (turbulence). The author interprets these successes to the effect of entrepreneurship education experienced in their third year of university; however, in the absence of comparison with a control group, it is not possible to claim that there is a causal relationship.

2.1.4 Impacts including economic impacts



A few studies show statistical relationships between various enterprise and entrepreneurship education learning activities and economic impacts. They do not demonstrate attribution to the enterprise and entrepreneurship education learning activities and the knowledge, skills and competences gained and used from these.

Starting a new business

There is strong evidence that enterprise and entrepreneurship education is linked to propensity to establish a new business.

Charney and Libecap's (2000) survey of Arizona enterprise and non-enterprise graduates suggests that HE programmes have been effective in encouraging graduates to develop start-ups. Entrepreneurship graduates are three times more likely to start new business ventures.

Controlling for socio-economic variables, the probability of starting new ventures is 25% more for enterprise and entrepreneurship education graduates than non-enterprise graduates. Similarly, a survey of 328 graduates in the USA (Summit Consulting, 2009) found a strong relationship between participation in enterprise and entrepreneurship courses and setting up a business (as compared to those who did not take-up enterprise and entrepreneurship education).

Cowling's (2009) econometric analysis¹⁶ of data from the 2005 Global entrepreneurship Monitor (GEM) Survey in the UK shows that receipt of enterprise training in college or university has the following effects related to business start-up:

- increases the probability of starting a new business by 1.3%;
- increases the probability that an individual is currently an owner-manager of a small business by 2.3%; and
- increases the probability of starting a new business in the future by 3.2%.

This study suggests that enterprise and entrepreneurship education in FE or HE does have a positive effect on future entrepreneurial behaviour. However, the analysis does not account for self-selection in participating in enterprise and entrepreneurship education. It is possible that students aiming for more

¹⁶ Cowling's model controls for core personal characteristics (e.g. age, education, gender, ethnicity), a regional identifier and a socio-economic identifier for the individuals place of domicile.

entrepreneurial career paths choose to take up enterprise and entrepreneurship education at college or university¹⁷.

There is some evidence of a relationship between student enterprise projects and new business creation. A review of the 50 years of Young Enterprise in the UK found differences between those who had experienced enterprise and entrepreneurship education (either at school or at university – the study does not distinguish) and those who did not with 42% of Young Enterprise alumni being owners of a business (although not necessarily a start-up) compared to 26% of those in a control group with similar characteristics¹⁸. In Norway, 21% of 25-34 year olds who have participated in Young Enterprise have started their own company, compared with 4.5% in this age group across the whole population¹⁹.

Analysis of results of the 2008 global GEM survey shows that education and training has a positive effect in starting a business (early stage entrepreneurial activity or TEA²⁰) in 37 countries²¹. However the study does not differentiate between level of education where enterprise and entrepreneurship education was provided (it includes enterprise and entrepreneurship education at school, university or college, SME placement or a training scheme). To eliminate the problem of self-selection, the measure only includes compulsory training. It also controls for a range of demographic factors (age, gender, education and working status). Table 5 below shows the results of this analysis for countries which have similar economies as the UK and whose results were statistically significant (i.e. there were sufficient numbers of people who had participated in mandatory training in the survey). The UK score shows that an individual who has received (mandatory) enterprise and entrepreneurship education is 2.4 times more likely to start a business compared to an individual with the same demographic characteristics who did not participate in enterprise and entrepreneurship education.

Table 5: GEM from Training Education in Early Stage Entrepreneurial Activity (TEA), Developed Countries, GEM Adult Population Survey 2008

Country	Gain in TEA rate from Training
France	4.3
Israel	3.0
Germany	2.8
Belgium	2.6
United Kingdom	2.4

¹⁷ Cowling, M. (2009), 'The Impact of Entrepreneurship Training and Small Business Experience on Future Entrepreneurial Activity in the UK', Institute for Employment Studies

¹⁸ Young Enterprise (2012), Impact: 50 Years of Young Enterprise

¹⁹ Luktvaslimo, M. (2003) Hva hendte siden: ungdomsbedrifter i den videregående skolen (What happened later: the company programme in upper secondary schools). NTF-notat. 2003:1

²⁰ Early Stage Entrepreneurial Activity of TEA includes those working-age individuals who are in the process of starting a business (nascent entrepreneurs) or owners of a new business (under 42 months old).

²¹ Martinez et al. (2010). *Global Entrepreneurship Monitor Special Report: A Global Perspective on Entrepreneurship Education and Training*

Country	Gain in TEA rate from Training
Iceland	2.3
Italy	2.3
Japan	2.1
Ireland	1.9
Greece	1.8

Source: Martinez et al. (2010). *Global Entrepreneurship Monitor Special Report: A Global Perspective on Entrepreneurship Education and Training*

Increasing employability and earnings

A few studies show a positive relationship between enterprise and entrepreneurship education in HE and employability (and lack of unemployment) and earnings.

The European Commission's (2012)²² survey of alumni of enterprise education courses in nine universities and a control group shows evidence of a relationship between participation in enterprise and entrepreneurship education and employability outcomes. The survey finds that more entrepreneurship alumni (76%) compared to the control group (59%) started paid employment immediately after graduation. Fewer entrepreneurship alumni (12%) experienced one or more periods of unemployment since graduation compared to 30% of the control group. More entrepreneurship alumni (16%) are self-employed (either as entrepreneurs or freelancers) compared to those who did not participate in enterprise and entrepreneurship education (10%).

Charney and Libecap's (2000) survey of alumni of an entrepreneurship program and other alumni of Arizona university provides some evidence that enterprise and entrepreneurship education can lead to better employability prospects and higher incomes. Controlling for personal characteristics (including gender), enterprise and entrepreneurship education graduates were more likely to be employed full-time and to earn \$12,561 more a year compared to non-enterprise and entrepreneurship education graduates. Those working for large firms earned approximately \$23,500 more a year than other graduates.

Contributing to the growth of businesses

Two studies quoted above also show some relationship between enterprise and entrepreneurship education and business growth.

The evaluation of the Berger Arizona Entrepreneurship program (Charney and Libecap, 2000) found that small firms employing enterprise and entrepreneurship education graduates had greater sales and employment growth than those who did not employ enterprise and entrepreneurship education graduates. Firms owned by enterprise and entrepreneurship education graduates were found to be, in general,

²² European Commission (2012). *Effects and impact of entrepreneurship programmes in Higher Education*, European Commission - DG Enterprise and Industry by EIM Business & Policy Research (the Netherlands)

larger and have more sales than those owned by non-enterprise and entrepreneurship education graduates.

Cowling's (2009) econometric analysis of data from 2005 GEM Survey in the UK shows that participation in enterprise and entrepreneurship education in HE or FE increases the probability that an individual will develop a new activity within their employer²³ by 0.4% (compared to those who did not participate in enterprise and entrepreneurship education at this level).

Creating employment and economic growth

Only one study addresses the impact of an enterprise and entrepreneurship initiative and economic growth (EKOS 2010). This endeavours to attribute the outcomes and impacts of the Flying Start programme which aimed to encourage students in HEIs in England to think about starting a business through a range of activities over a 12-month period (three-day residential courses, workshops, online resources, mentoring). This study used a survey of participants although it is acknowledged that responses were not representative of the participants and the different approaches adopted by HEIs.

The evaluators estimated that the programme had created 465 new businesses and potentially 770 total jobs, or 110 net additional jobs. This was estimated to represent a Gross Value Added (GVA) contribution to the economy of £14.82m. With an expenditure of £880,000, the cost per gross job is £1,100 and £8,700 per net additional job. Overall, the programme demonstrated a return of investment of £17 for every £1 spent. This is higher than the national benchmark for enterprise support programmes which is £14.10 for £1 spent.

In the main while statistical relationships can be found or inferred there are no studies which enable impacts to be compared to different enterprise and entrepreneurship education initiatives (length, timing in education and types of activity). More of the evidence relates to HE and school initiatives. There are no studies which differentiate the types of jobs which EE graduates do in SMEs or large businesses.

²³ The GEM terminology for this term is "job-related start-up". As Cowling explains:

"This is akin to what business researchers often call intrapreneurship, or entrepreneurial activity within an existing

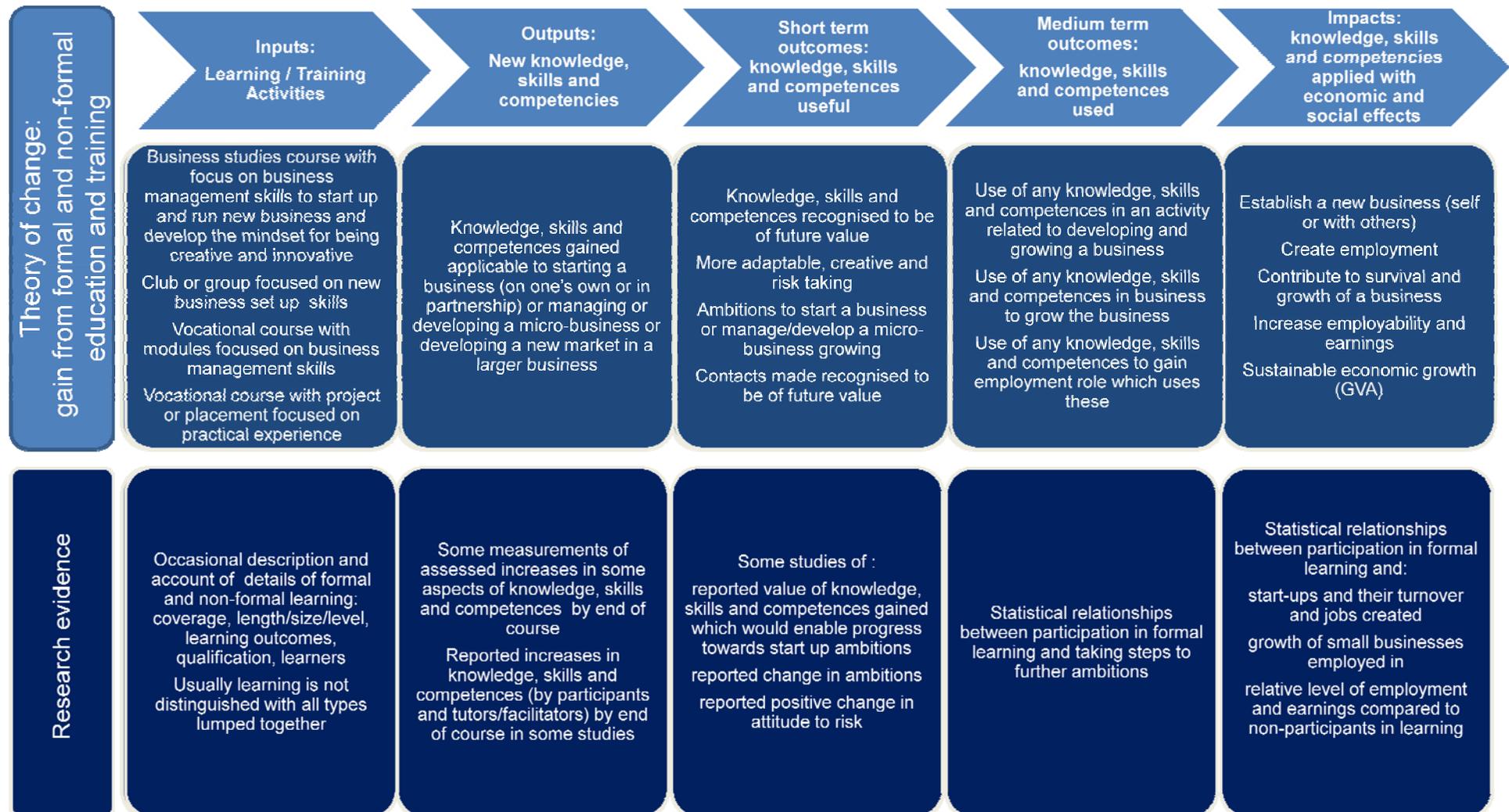
firm. Economists might associate this with endogenous growth. It may subsequently lead to spin-out activity, but

as it is measured here it simply relates to workers who are engaged in a new business activity as part of their normal job function."

2.1.5 Summary of evidence

Figure 3 shows the extent that the literature evidences the expected outcome and impacts of student participation in enterprise and entrepreneurship education.

Figure 3: Logic model with summary of evidence from the literature



2.2 Effective practice

Only two studies identified have attempted comparisons of the effectiveness of different types of entrepreneurship education on students. These are both in HE and relate to short term outcomes (changes in intentions) ²⁴.

Audet (2004) assess the effect of participation in a compulsory module (15 classes of 3 hours) of an undergraduate course at a university in Montreal, Canada. Students participating had the choice of two types of activities: the preparation of a business plan or for the preparation of a case study on a SME. The researchers surveyed students before and immediately after the course to identify changes in attitudes and intentions; and to compare the effects of the two types of provision. The study found that neither type of enterprise and entrepreneurship education had any significant effect on how students' perception of desirability to launch an enterprise venture. Enterprise and entrepreneurship education did however heighten their assessment of how feasible it is to start a business. Both sets of students demonstrated a reduction in their intention to start a business in the future. The only difference between types of enterprise and entrepreneurship education identified was that those who chose the business planning exercise demonstrated a greater reduction in future intentions to start a business.

Walter and Dohse (2009) undertook a survey of 1,959 male students in 65 university departments (engineering, computer science, business only) in 30 regions in Germany. The researchers started with a very large population (7,925 questionnaires) and only included in the sample respondents who had passed their second year of study, had less than four years of work experience, did not plan to take over a family business, were German citizens and had not chosen their university primarily for its entrepreneurial support. To measure entrepreneurship education, the researchers counted total number of credit points for entrepreneurship-specific courses offered at their department. Researchers also reviewed descriptions of courses and curricula and coded them into two types:

- reflective modes; such as lectures, literature-based seminars
- active modes; such as business plan seminars, business simulations, project seminars

The survey asked students to rate agreement/disagreement (7-point Likert scale) on a number of statements assessing entrepreneurial intentions. The study also considered whether the university department is located in a region²⁵ with high start-up intensity, defined as the number of start-ups per 10,000 inhabitants in technology-oriented services, knowledge-intensive, non-technical advisory and consulting services sectors. The authors tested the hypothesis that such regions are likely to

²⁴ We understand that the University of Cambridge has measured the effect of different types of enterprise education programmes (credit-bearing and non-credit bearing) delivered at the university on changes to students' intentions (self-efficacy) sixth months after the end of the programme. These results have not been published to date but may offer interesting lessons on effective practice.

²⁵ Region was defined as the German Spatial Planning Regions, "Raumordnungsregion", made up of several NUTS3 level areas. In comparison to the English context, the regional unit would therefore be smaller than an England Government Office Region and made up of several local authorities.

offer greater entrepreneurial opportunities through knowledge spillovers and that students within the region are more likely to perceive and exploit such opportunities (in particular after being sensitized by enterprise and entrepreneurship education).

The study found that active modes of enterprise and entrepreneurship education (such as business plan seminars) have a direct positive impact on students' entrepreneurial intentions. Reflective modes of enterprise and entrepreneurship education, on the other hand, were only effective in economically strong (high-start up) intensity regions.

The range of short term outcomes reported by studies that assess students' post-course changes in intentions (as summarized in Table 4) as well as the findings of the two studies above suggests that the types and quality of inputs and the context of provision probably have an impact on the progression to later stages in the theory of change towards economic impacts.

One study has compared the stage and type of enterprise and entrepreneurship education initiative experienced by learners on outputs of enterprise and entrepreneurship education (knowledge, skills and competencies).

Levie et al (2010) used the 2007 GEM survey of 5000 individuals in the UK to examine the effects which different experiences of enterprise and entrepreneurship education had on two "enterprising" outcomes: (a) an individual's perceptions of their skills to start a business and b) the ability to perceive entrepreneurial opportunities in the local economy. They compared the results for graduates and non-graduates and between four types of enterprise experiences. These are presented in the table below and are controlled for a number of socioeconomic variables (but not for family background).

Table 6: Effects of EE at 4 different levels on two variables, graduates and non-graduates

	Business or Enterprise Training at School	Business or Enterprise Training at College or University	Placement at SME in School or College	Government or Public Sector Enterprise Training Course in Enterprise or Business Skills
Do you have the knowledge, skills and experience to start a new business?	Graduates: no effect Non-graduates: positive effect (if voluntary)	Graduates: strongest effect (stronger than networking) Non-graduates: positive effect	Graduates: positive effect Non-graduates: (effects not reported in article)	Graduates: weak (voluntary), no effect (compulsory) Non-graduates: positive effect (voluntary)
In the next six months will there be good	Graduates: no effect	Graduates: strongest effect	Graduates: positive effect	Graduates: weak (voluntary)

	Business or Enterprise Training at School	Business or Enterprise Training at College or University	Placement at SME in School or College	Government or Public Sector Enterprise Training Course in Enterprise or Business Skills
opportunities for starting a business in the area where you live?	Non-graduates: positive effect (if voluntary)	Non-graduates: no effect	Non-graduates: positive effect	Non-graduates: no effect

Source: Levie, J., Hart, M., and Anyadike-Danes, M., (2010), "The effect of business or enterprise training on opportunity recognition and entrepreneurial skills of graduates and non-graduates in the UK", *Frontiers of Entrepreneurship Research 2009* pp. 749-759

These findings suggest that enterprise and entrepreneurship education in HE has the strongest impact on graduates' perceptions, relevant knowledge and skills. Enterprise and entrepreneurship education in school and work experience in college has a positive effect on non-graduates ability to identify entrepreneurial opportunities; while courses in FE do not.

2.3 Key summary points

In relation to **outcomes and impacts** the literature analysis indicates that:

- participation does lead to the acquisition of relevant business related knowledge, skills and competences for enterprise and entrepreneurship reported by learners; in one instance these have been tested before and after; in some instances they have been compared to students who have not participated;
- participants are more likely to change attitudes, such as risk taking, and intentions, such as around being self-employed or being entrepreneurial, than non-participants; with an indication in one study that some students firm up their intentions as a result of such courses because they decide whether starting up a business is for them;
- studies have mixed results about whether such courses increase students' perception of feasibility; it is greater in Wales where enterprise and entrepreneurship education appears to be more embedded in school as well as FE than England;
- there is no evidence that students are more likely to take steps as a result of courses 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;

- there are however positive statistical relationships between various enterprise and entrepreneurship education learning activities in school and tertiary education and economic impacts including starting a new business (strong evidence for entrepreneurship course graduates); increasing employability and earnings; and contributing to the growth of businesses (especially for graduates entering small businesses). These suggest that enterprise and entrepreneurship education is a positive stimulus;
- participants in enterprise and entrepreneurship education may choose such courses because of previous intentions; one study indicates that there is a positive effect on progressing towards starting a new business where it is compulsory; and
- one study suggests a net positive impact on GVA of enterprise and entrepreneurship education in HE.

In relation to **effective practice**:

- one study suggests that students who participated in student enterprises report more business related knowledge, skills and competences than students who have participated in enterprise courses;
- one study shows that active content (seminars, simulations, group projects) in enterprise and entrepreneurship education has a more positive effect on students' intentions than non-active learning;
- one study suggests that graduates are more likely to gain knowledge, skills and competences and positive intentions towards starting a new business from their experience in HE from courses and placements; non-graduates only from placements and experience.

3 Review of the Quality of the Literature

In this chapter we examine the coverage of the literature which assesses the outcomes and impacts of enterprise and entrepreneurship education and the methods of assessment used to identify and attribute outcomes and impacts.

3.1 Coverage of assessment

The studies selected for detailed review have the following characteristics:

- sector: the majority of assessed initiatives in the tertiary sector relate to HE rather than FE (or vocational and educational training (VET) as commonly described in the European literature);
- age groups: while they cover young people there is a wider and richer literature about school-based initiatives which often cover those aged 16-19 than about older young people in FE and HE aged 19 and over. Initiatives have been included here where assessments methodologies that can be applied to the FE/HE sector are used or where the application of the methodology has identified positive outcomes for young people;
- length of course: these range from short courses and stand-alone classes (including pilots running a few hours to test an assessment methodology) to dedicated enterprise or entrepreneurship two-year degrees. While initiatives with relatively low levels of inputs are assessed, the range of outputs and outcomes they identify are generally limited to intentions or attitudes. Many studies do not distinguish the length and type of learning in their analysis of statistical relationships between education and the outcomes and impacts set out in the logic model;
- formal and non-formal: the latter include Young Enterprise type projects, enterprise-sponsored initiatives and student society type activities; although the literature assessing their effects is very limited. They do not include hands-on learning initiatives, such as running campus businesses;
- timing of assessment: most provide assessment shortly after the initiative has been completed; relatively few assess the initiative and its contribution to outcomes and impacts expected some years afterwards; and
- choice: they mainly cover learning that students opt into rather than being mandatory.

3.2 Methods of assessment (for components of the logic model and the indicators)

3.2.1 Inputs

Most of the literature does not clarify or identify the nature and cost of enterprise and entrepreneurship initiatives being assessed. This means that meaningful comparisons between types of initiative and their differential impacts are not always possible and that it is not possible to consider a cost-benefit or economic impact analysis.

The surveys of the general population and alumni, presenting evidence about enterprise and entrepreneurship education initiatives are not about a specific education initiative. Some do not identify what level of education or the age at which enterprise and entrepreneurship education was received.

The 2008 Special Education Edition GEM survey is more useful because it asks respondents to distinguish at what educational level they received enterprise education or training. Analyses of these GEM results have statistically tested the relationship between respondents' participation in education and training at university or college and a range of outcomes (such as employment or self-employment) (Cowling 2009, Levie et al 2010, Martinez et al. 2010). Typically, they control for a range of other variables and therefore – as much as possible – aim to isolate the effect of enterprise and entrepreneurship education in HE and FE on those outcomes. These results can indicate whether investment in enterprise and entrepreneurship education at tertiary level is worthwhile even if they cannot trace this to specific initiatives.

Where the literature accounts for the costs and components of enterprise and entrepreneurship initiatives in its assessment, it does not take account of the extent that the initiatives are positively supported by the context and the wider offer. Stakeholders generally believe that the context is important. This is particularly so in England where HEIs are increasingly interacting with businesses, the local community and the wider community through incubators, innovation exchanges, knowledge-transfer hubs, spin-offs, relationships with science or business hubs and consultancy services. In FE, the Gazelle Group's think piece "Enterprising Futures: the changing landscape and new possibilities for further education" presents a similar vision for colleges as well as students providing services and ventures directly to private businesses and the public sector.

3.2.2 Outputs

The literature contains few examples where there has been the monitoring and assessment of the attainment of skills and competencies. A recent (2011) survey of FE colleges in England found that the majority of colleges (53per cent) do not monitor their enterprise and entrepreneurship education activities²⁶ while Ofsted's 2012 review of enterprise and entrepreneurial education in 15 FE colleges providing vocational education to 16-19 year olds found that "*Despite often very sophisticated*

²⁶ Enterprise UK (2011) Colleges at the core of the entrepreneurial economy: A review of enterprise provision in FE

and transparent tracking and monitoring systems to identify students' progress in relation to knowledge and understanding for the main qualification, this did not extend to explicit recording and monitoring of students' progress in developing enterprise-related skills" (Ofsted 2012).

The literature, on the whole, does offer examples of perceived increases in knowledge, skills and competencies although in many studies this was based on anecdotal evidence and individual case studies. These studies were insufficiently robust to merit inclusion in the literature review. The Ofsted (2012) review is a good example of using qualitative methods (interviews with students, teachers, college, staff and local employers) to report perceived increases in knowledge, skills and competencies.

Some studies have recorded students' perception of increases in enterprise-related knowledge, skills and competences; either through surveys of alumni or through qualitative interviews with students. Specifically:

- Summit Consulting (2009) for the Small Business Administration, Office of Advocacy in the USA analyse the responses to an online survey of MBA alumni from five US universities (153 respondents, class of 2000) and undergraduate alumni (283 respondents, Class of 2000). Both groups were asked whether they participated in entrepreneurship education and the results for those who did were compared to the results of those who did not;
- Young Enterprise (2012) undertook online surveys of their alumni (371 responses) who were asked to rate the value of their participation in Young Enterprise programmes on their acquisitions of a list of skills. The study results do not differentiate between participation in a Young Enterprise programme at school or university;
- The European Commission commissioned EIM Business and Policy Research to undertake an online survey of alumni of enterprise education courses and non-EE alumni in HEIs as well as a survey of the European Confederation of Junior Enterprises (JADE) (an umbrella group of junior enterprises started by students). The researchers reviewed a selection of European universities which offered enterprise education courses and assessed whether the institutions kept up-to-date alumni databases. Nine universities were selected (from Sweden, Ireland, Austria, Northern Ireland, Finland, Spain, Germany, Hungary and the Netherlands). In total, 851 entrepreneurship alumni, 1,482 control group alumni and 288 JADE alumni completed the questionnaire; and
- Pittaway et al (2010) looked at the effect of learning in enterprise clubs and societies through qualitative interviews with a small number of students in the UK and an email survey of students from the UK and the USA.

There are some examples of tools developed to measure outputs and specifically measuring increases in knowledge, skills and competences.

In HE, DeTienne and Chandler (2004) used an experimental methodology to assess whether a group of undergraduates in the USA would acquire the competence of

“opportunity identification” through enterprise education (in particular a series of idea-enhancing exercises aimed to boost creativity and opportunity identification). The authors asked the students to keep a register of business opportunities as they occurred to them over the eight week period of the course. Each student was required to make five entries every week and were encouraged to do so “as soon as an idea occurs” and to “begin to look at the world in such a way that you see everyday activities as possible opportunities”. The data was then independently given a rating for “number of opportunities” and “innovativeness of opportunities”. Results were then compared to a control group who did not participate on the course.

At school-level, Oosterbeek et al (2008) presents an assessment of students’ entrepreneurial competences using the Escan test. This is a validated self-assessment test based on 114 items (questions and statements); the majority are statements on a seven-point scale requiring the respondent to indicate the extent of agreement or disagreement with the statement. It is based around 10 ‘factors’; traits such as ‘need for achievement’ and ‘need for power’ and skills such as market awareness and creativity. According to the authors, the test results have been found to correlate significantly with objective measures of entrepreneurial performance (such as business survival, profits, income and sales) and is widely used in the Netherlands to assess entrepreneurial competence, including by commercial banks (Rabo Bank) to assess granting loans to potential entrepreneurs and by the Dutch Chamber of Commerce.

Evaluators of the Scottish Government’s programme Determined to Succeed (DtS)²⁷ in schools developed a composite index to measure students’ progress, “The Index of Enterprising Attitudes and Behaviour (IOEAB)²⁸. The IOEAB is a function of the following behaviour traits which DtS aimed to develop: working with others, personal effectiveness, problem solving/creativity, communication, approach to learning, confidence, life beyond school, delegating, challenging and co-operation. IOEAB, as used in this evaluation, combined students’ self-assessment with other agents’ observation. In this case, parents and teachers were asked to assess the student. The researchers noted that in a different context, employers could also be relevant assessors of participants’ scores. This measure could therefore be adapted and adopted in an FE or HE setting.

3.2.3 Short term outcomes

Key studies measuring short term outcomes have used questionnaires before and after an enterprise and entrepreneurship education initiative to assess how far the students have progressed. Some studies have used control groups and some have undertaken assessments of whether the changes remain some months after the intervention.

The majority of such studies base their methodology on Ajzen’s (1991) theory of planned behaviour (e.g. Soutaris et al (2007), Peterman and Kennedy (2003),

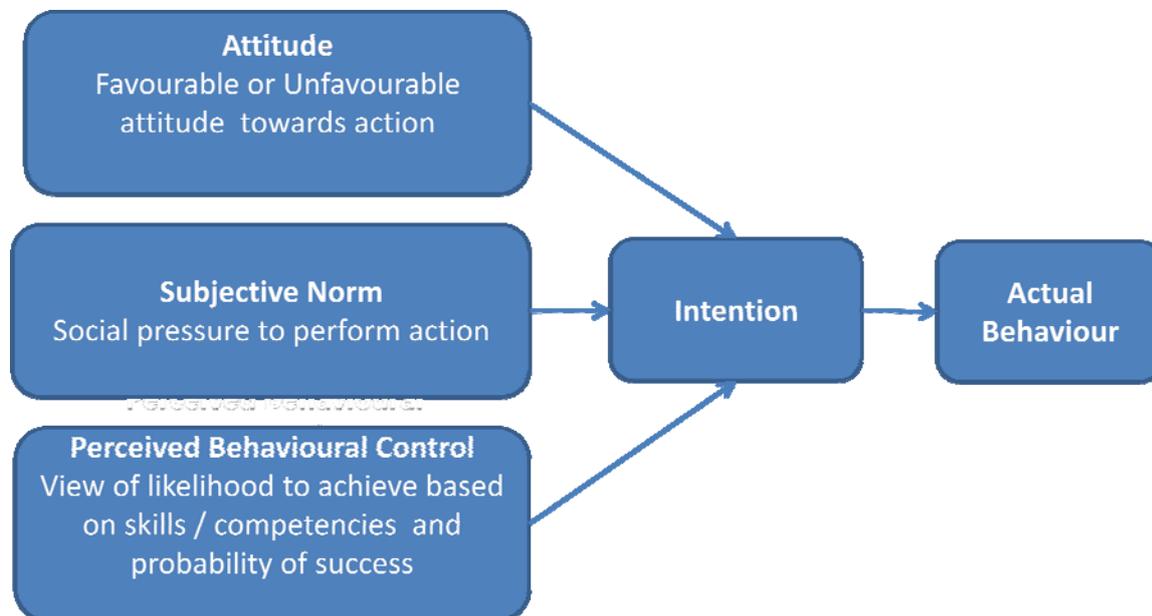
²⁷ DtS was a £86 million investment programme in Scottish secondary schools over five years (2003-2008) and comprised of four key themes: enterprising teaching and learning, entrepreneurial learning, work-based vocational learning and appropriately focused career education.

²⁸ Scottish Executive (2007), National Evaluation of Determined to Succeed – Phase 2: Early Impact Across Scotland, A report by York Consulting, <http://www.scotland.gov.uk/Resource/Doc/166284/0045278.pdf>

Oosterbeek et al (2008), von Graevenitz et al (2010), Fayolle and Gailly (2009), Walter and Dohse (2009)). According to this theory, *intention* to perform an activity is a strong predictor of actual behaviour. Ajzen's theory has been empirically proven for a range of different activities (such as voting in elections, losing weight and shoplifting)²⁹. It has not been empirically proven for enterprise education and enterprise creation – therefore these studies can only (thus far) provide evidence of short-term outcomes.

The theory of planned behaviour proposes that there are three inputs that determine intentions, as shown in Figure 4 below. Researchers of enterprise and entrepreneurship education have developed questionnaires which test all three types of contribution to intention; typically through asking students to rate their agreement with a number of statements along a Likert scale.

Figure 4: Ajzen's Theory of Planned Behaviour



Some studies have used this approach in whole or part. For example, Nakkuna et al (2004) review the benefits of initiatives delivered by the National Foundation for Teaching Entrepreneurship (NFTE) in six secondary schools in Boston, USA³⁰. The study assessed differences in attitudes and actions of students before and after the NFTE intervention and also in comparison to a control group. Walter and Dohse (2009), for example, have gone further in examining the impact of other variables on short term outcomes to understand about context and the dimensions of courses on intentions (see section 2.2 above).

²⁹ Ajzen I., (1991), "The Theory of Planned Behaviour", *Organizational Behavior and Human Decision Processes*, vol.50, p.179-211

³⁰ Nakkula, M., Lutynes, M., Pineda, C., Dray, M., Gaytan, F. And J. Huguley (2004). *Initiating, leading, and feeling in control of one's fate: Findings from the 2002-2003 study of NFTE in six Boston public high schools*. Harvard Graduate School of Education. Available at: http://www.nfte.com/sites/default/files/harvard-nfte_study_02-03_full_report_6-6-04.pdf

Dunchev (2012) instead tests whether students on an entrepreneurship course at a Danish business school have developed “effectual thinking”, the latter being a predictor of an entrepreneurial mindset. Effectual thinking is defined as the process of thinking which focuses on progressively attaining a goal using available resources in a creative way. It is characterised by imagination, spontaneity and risk-taking. Dunchev tests effectual thinking by observing five students as they solved a Lego puzzle and “talked aloud” to vocalise their thoughts and explain their thought process. This was done both before and after course participation.

Interviewees have suggested that creativity tests such as Torrance Tests of Creative Thinking³¹ may be better methods of assessing future entrepreneurial behaviour, although we have not identified any examples of where it has been used to date.

3.2.4 Medium Term Outcomes

Only two studies have examined medium term outcomes of enterprise and entrepreneurship education initiatives, such as reported use of skills in post-work employment, post-course development of business start-ups or taking-up further learning after the course to further entrepreneurial ambitions. Both have used follow up surveys.

Matlay (2008) followed the career paths of 64 graduate entrepreneurs from eight HEIs in the UK over a period of 10 years (1996 – 2007) to assess their *perception* of the impact of enterprise and entrepreneurship education on their choices³². The study results are generally positive but the number tracked is small and offers no comparison with a control group, and analysis/comparison with prior intentions.

Matlay and Westhead (2006) assessed the impact of the Shell Technology Enterprise Programme (STEP) which placed undergraduates on eight-week placements in SMEs. The research team assessed a sample of STEP students and a control group at four stages (pre-STEP, 8 weeks, 12 months and 36 months after the programme) and took particular care to match the characteristics of the control group with the intervention group. Univariate and multivariate analyses were used to assess the attribution of outcomes to the STEP programme and control for external variables.

Evidencing medium term outcomes requires longitudinal tracking of students of a specific programme and attributing the reported gains to the specific enterprise and entrepreneurship initiatives. The first element is costly and requires commitment to research (often) beyond the funding cycle of the initiative. Assessing attribution requires (at least) the use of statistical techniques and/or a control group which may be beyond the budget and ambition of a programme evaluation. It further requires an interest in collecting evidence specifically on medium-term indicators in addition to long-term impacts. It is thus not surprising that the literature around this stage in the theory of change is very limited.

³¹ Runco, M. A., Millar, G., Acar, S., Cramond, B. (2010) Torrance Tests of Creative Thinking as Predictors of Personal and Public Achievement: A Fifty Year Follow-Up, *Creativity Research Journal*, 22 (4). 22(4), 361–368, 2010

³² Matlay, H (2008), "The impact of entrepreneurship education on entrepreneurial outcomes", *Journal of Small Business and Enterprise Development*, Vol. 15 Iss: 2 pp. 382 - 396

3.2.5 Impacts including net economic impacts

As with medium-term impacts, the evidence base is very limited. It is, however, larger than for medium-term impacts because (a) one study (Charney and Libecap 2000) tracked alumni and a control group and asked questions about impacts and (b) some studies have used survey data to ascertain statistical relationships between participation in enterprise and entrepreneurship education (in general, not tracked to a specific EE initiative) and impacts.

Only one study can be identified (EKOS (2010), Evaluation of Flying Start) which has undertaken an economic impact assessment along the lines of BIS's Impact Evaluation Framework (IEF) and assessed net monetary impacts by estimating deadweight, leakage, substitution, displacement and multiplier effects. There are methodological problems in this study. Data on inputs and outcomes achieved is incomplete because of inaccurately specified programme budgets and patchy monitoring information keeping at the early stages of the programme. Data used to estimate economic impacts and net impacts were collected through a telephone survey of participants who were asked their perceptions of the effect of the programme on their behaviour. However, the researchers had no control over the sample and the population size was unclear.

Charney and Libecap (2000) assessed the impact of the Berger Entrepreneurship Program at the Eller College of Business and Public Administration at the University of Arizona between 1985-1999 through a survey of 2,484 individuals made up of 460 programme graduates and a control group of 2,024 other graduates from the same business school (but who did not take the entrepreneurship programme). A large range of outcomes for alumni are assessed, including employment and type of business they are employed in but also wealth and income. The most interesting aspect of their method is that the authors also undertake analysis of business size, contribution to business growth and whether the business is a high-tech firm. Data on firm size and growth are reported by graduates – there is no independent verification of the answers (other than whether it is a high-tech firm). A statistical model is used to assess the importance of participation in enterprise and entrepreneurship education controlling for other variables. However, the study does not address (or control for) the issue of self-selection: students on the dedicated one year programme need to apply through a competitive application process. On a practical level, it should be noted that this study was made possible because Eller College kept up-to-date databases of its alumni and that the entrepreneurship programme keep close links with its alumni which led to high response rates in the survey.

Two sources (Martinez et al 2010, Cowling 2009) analysed GEM survey data to test whether there are statistical relationships between participation in enterprise and entrepreneurship education and their expected impacts. Using statistical techniques, these studies assessed whether participation in enterprise and entrepreneurship education increases the likelihood of individuals starting a business. Martinez et al (2010) have done this analysis for mandatory education only across several countries participating in GEM – however they do not differentiate at what level of enterprise and entrepreneurship education is received and only provide a score for the UK (not England). Cowling's (2009) results are also for the whole of the UK but provide analysis specifically for "participation in education and training at university or college".

A few other studies provide evidence of impacts by comparing results between surveys of enterprise and entrepreneurship education alumni and a control group. The EIM study for the European Commission (2012), for example, surveyed alumni of enterprise education in nine universities and offers some evidence of a relationship between participation in enterprise and entrepreneurship education and impacts (specifically employability) by comparing results with a control group.

3.3 Opportunities for Further Research

The Danish Foundation for Entrepreneurship – Young Enterprise (DFE) has acknowledged the lack of evidence on the impact of enterprise and entrepreneurship education at tertiary level³³. In response, in 2011 it initiated a longitudinal research study which will follow 400 graduate students³⁴. The sample is split between those following courses which include an enterprise and entrepreneurship education element (the experiment group) and those on courses with no enterprise and entrepreneurship education element. The experiment group consists of students from six courses in four different universities; more specifically three business management courses, an engineering education, an education in humanities and one that is a pure entrepreneurship education for students from all disciplines. Graduate courses were chosen specifically because they are shorter in length than undergraduate courses and students tend to be older in age and therefore are both closer to the labour market and to the median average age at which people start their own business (38 years old in Denmark). The research intends to follow postgraduates over a seven year period; it also intends to collect data from seven cohorts of students (although it is not clear whether every cohort will be followed for seven years). It is hoped that the longitudinal nature of the study will result in meaningful findings about the attribution of EE on entrepreneurial outcomes. In a presentation of their approach in Eurostat's (2012) synthesis of articles on measuring enterprise and entrepreneurial education, the Danish research team specifically recommend that *“some of the leading countries like Finland, Denmark and the United Kingdom work together on developing these measurements further.”*

3.4 Key summary points

The assessment of research approaches and methods indicate that:

- initiatives in HE are more commonly assessed than in FE;
- course specific evaluations tend to measure immediate outputs (knowledge, skills and competences) and short term outcomes (attitudes and intentions);
- ambitions and actions (both short and medium term outcomes) are not generally being measured;

³³ Hoffman, A, Fuglsand, T., Vestergaard, L. (2012) Measuring Entrepreneurship Education, In: Eurostat (2012), Entrepreneurship determinants: culture and capabilities, Luxembourg, Chapter 9, pages 100 - 113

³⁴ Danish Foundation for Entrepreneurship – Young Enterprise, (2012), Impact of Entrepreneurship Education in Denmark - 2011, available at http://www.ffe-ye.dk/media/128455/impact_of_entrepreneurship_education_in_denmark_2011.pdf

- the length and nature of courses and the initiatives undertaken are often not distinguished in studies showing statistical relationships; the GEM 2008 study is an exception;
- comparative analysis is limited because of the paucity of studies of similar initiatives with similar groups and studies of the same initiative in multiple locations to test the significance of context;
- evaluative studies of programmes are hampered by not measuring inputs and describing the activities and participants;
- a few studies measure outputs some using tests (ESCAN and IOEAB), surveys, experiments and qualitative interviews. Many are using case studies without any purposive sampling and appropriate analysis;
- a few studies measure change in intention (planned behaviour) which can indicate whether entrepreneurial actions are likely to follow education and training compared to a control group; one study measures change in effective thinking as a predictor; otherwise few studies measure any outcomes arising from enterprise and entrepreneurship education;
- the exceptions are those by Matlay and Westhead (2008) and Charney and Libecap (2000);
- no studies effectively measure the value and scale of economic impacts;
- Charney and Libecap's study of the Berger Entrepreneurship Program stresses the value of longitudinal studies and comparative control groups to produce robust results. This demonstrates how a database of alumni networks can enable such studies to be carried out; and
- opportunities for longitudinal studies (such as the Danish study) do not necessarily have to include very large samples of participants but they do need to track them over relatively long periods.

4 Mapping of provision

In this chapter we set out the scope and scale of enterprise and entrepreneurship education provided to young people who are not in school. This draws on the mapping of documentary material about provision and the analysis of the database created and interviews with a small sample of providers.

4.1 Providers of enterprise and entrepreneurship education

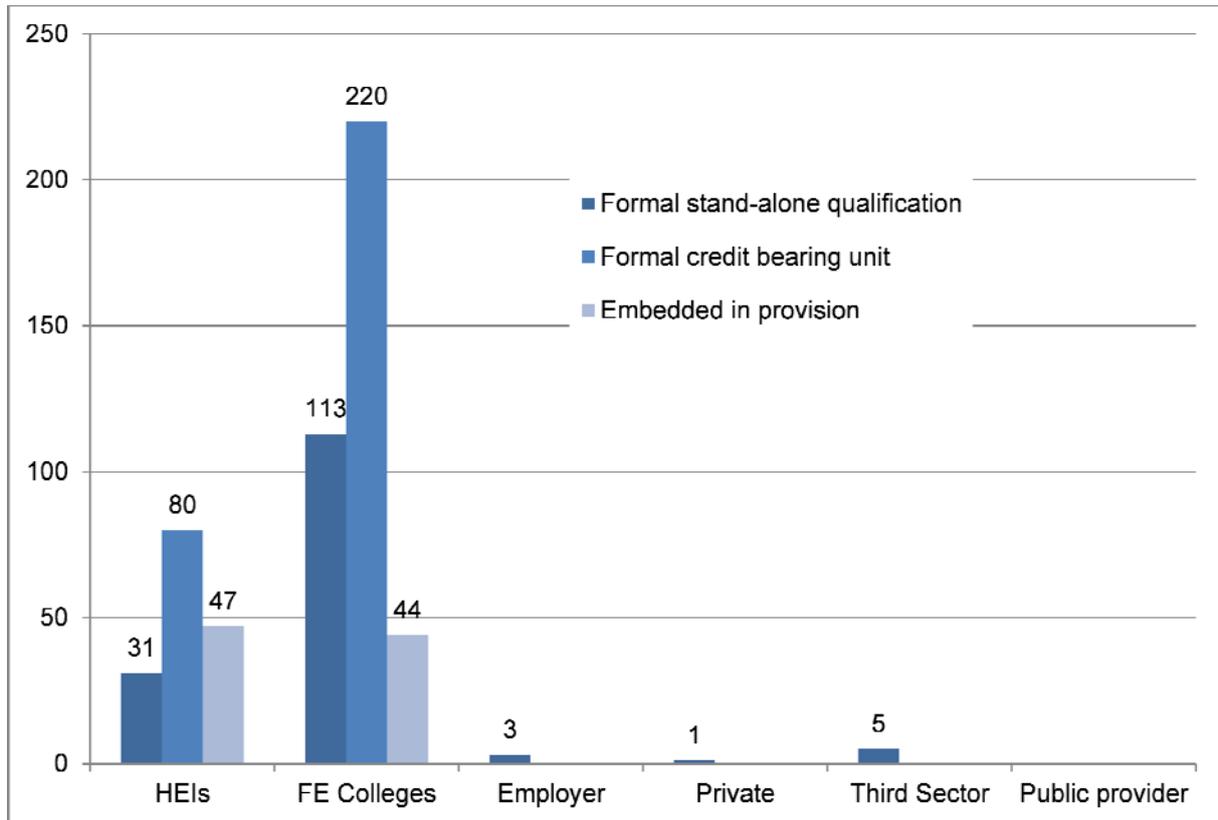
4.1.1 Formal provision

Formal courses that lead to a qualification or are a constituent part of a qualification are widely available. The data collected suggests that formal courses are offered by 375 separate institutions in England. This includes:

- 91 HEIs (70% of HEIs);
- 275 FE institutions (74% of FE colleges); and,
- 9 others.

Figure 5 shows the different types of formal provision within and across sectors. This shows that:

- 34 HEIs (26%) offer full qualifications; 80 institutions (61%) provide credit bearing units in enterprise education; and 47 providers (36%) state that they embed entrepreneurial skills into their learning offer;
- 113 FE colleges (31%) had formal full qualifications and 220 offer credit bearing modules (59% of FE colleges). A further 47 FE colleges had embedded provision in their learning offer (13%) and
- a total of 9 employers, private and third sector providers offer a full qualification.

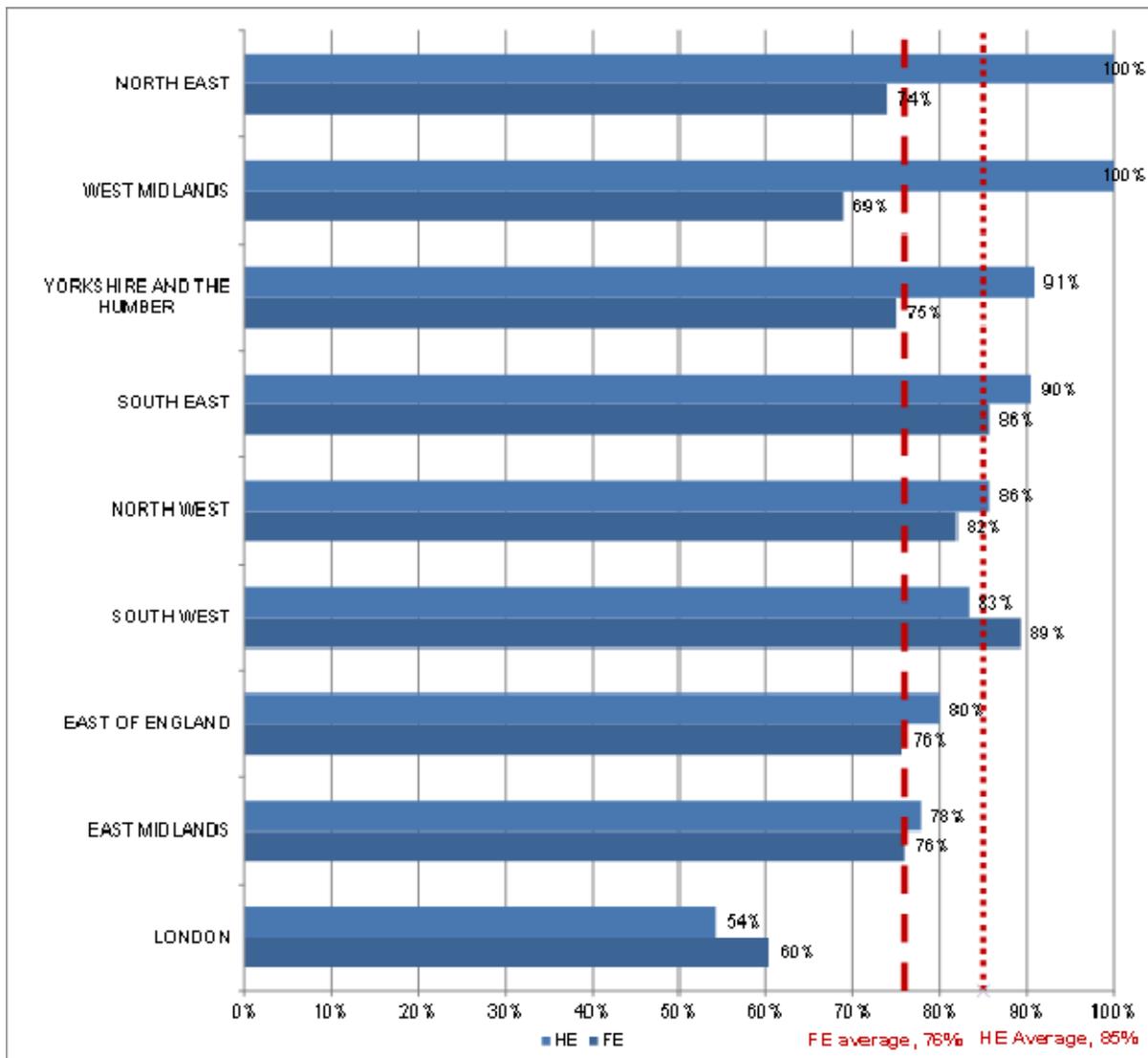
Figure 5: Type of provision by provider

The main focus of the provision is on private or social enterprise creation or entrepreneurial skills, attitudes and competences. In the main the courses appear to be funded by learners and the government in the same way as other courses in FE and HE, except for those offered by other providers.

Formal courses (including stand-alone qualifications, credit bearing units and embedded provision) are offered by a large number of institutions across the country: 395 in total. The majority of these are in the South East (73 providers), North West (62 providers) and London (52 providers). The regions with the fewest providers of formal enterprise education are the East Midlands (26 providers) and the North East (22 providers).

All HEIs in the North East (5) and the West Midlands (12) offer formal enterprise education (Figure 6). London has a much lower proportion of FE colleges and HEIs offering formal provision than other regions (54%) although this may reflect the larger number of specialist institutions in London than in other regions (see section 4.1.3 below).

In FE, the average proportion per region of FE colleges offering formal enterprise education is 76%. The South West (89%), the South East (86%) and the North East (82%) are well above this average. However, London again is below this figure (60%) which may in part reflect a small proportion of technical colleges.

Figure 6: Proportion of HE or FE offering formal enterprise education by region

4.1.2 Non-formal provision

Non-formal provision which includes student enterprise clubs and societies are also widely available although this is significantly greater in HE than in FE. The mapping indicates that in HEIs, there are 147 instances of non-formal enterprise education occurring in 80 HEIs (61% of HEIs). In FE colleges, there are 147 instances of non-formal provision in 117 FE colleges (31% of FE colleges). Other providers of non-formal enterprise education include a range of employers (30 instances in 27), public bodies (12 instances in 6) and the third sector (36 instances in 26).

Some examples of these employers include financial or accountancy companies such as Lloyds TSB, RBS and Grant Thornton (offering awards, challenges or programmes); media organisations such as The Telegraph and Channel 4 (offering a Youth Enterprise Media Award and 'For 3 Minutes' respectively); Starbucks (Starbucks Youth Action); Shell (Shell LiveWire); and a range of other organisations offering the 'Erasmus for Young Entrepreneurs programme' such as Birmingham Chamber for Commerce and Industry, Cumbria Business Education Consortium Ltd, EISC Ltd, Merseyside Expanding Horizons, and Norfolk and Waveney Enterprise

Services. Public sector provision include challenges, entrepreneur clubs, awards and training from local authorities (Blackpool, Hull, Newcastle, Sunderland, Kent) and third sector providers of training, master classes, workshops, awards, mentoring, competitions and networks from a range of providers, including NACUE, NFTE, Prince's Trust, Envision, Euclid, Enterprise Education Trust, Ambition, and Education Business Partnerships.

Figure 7 indicates that the largest numbers of HEIs with non-formal provision are in London and the South East. For FE colleges, the highest numbers are in London, the North West and the South East. The regional distribution of non-formal enterprise education offered by other providers is largely unknown, although it is assumed that much of this would be nationally available.

Figure 7: Count of non-formal EE providers by region

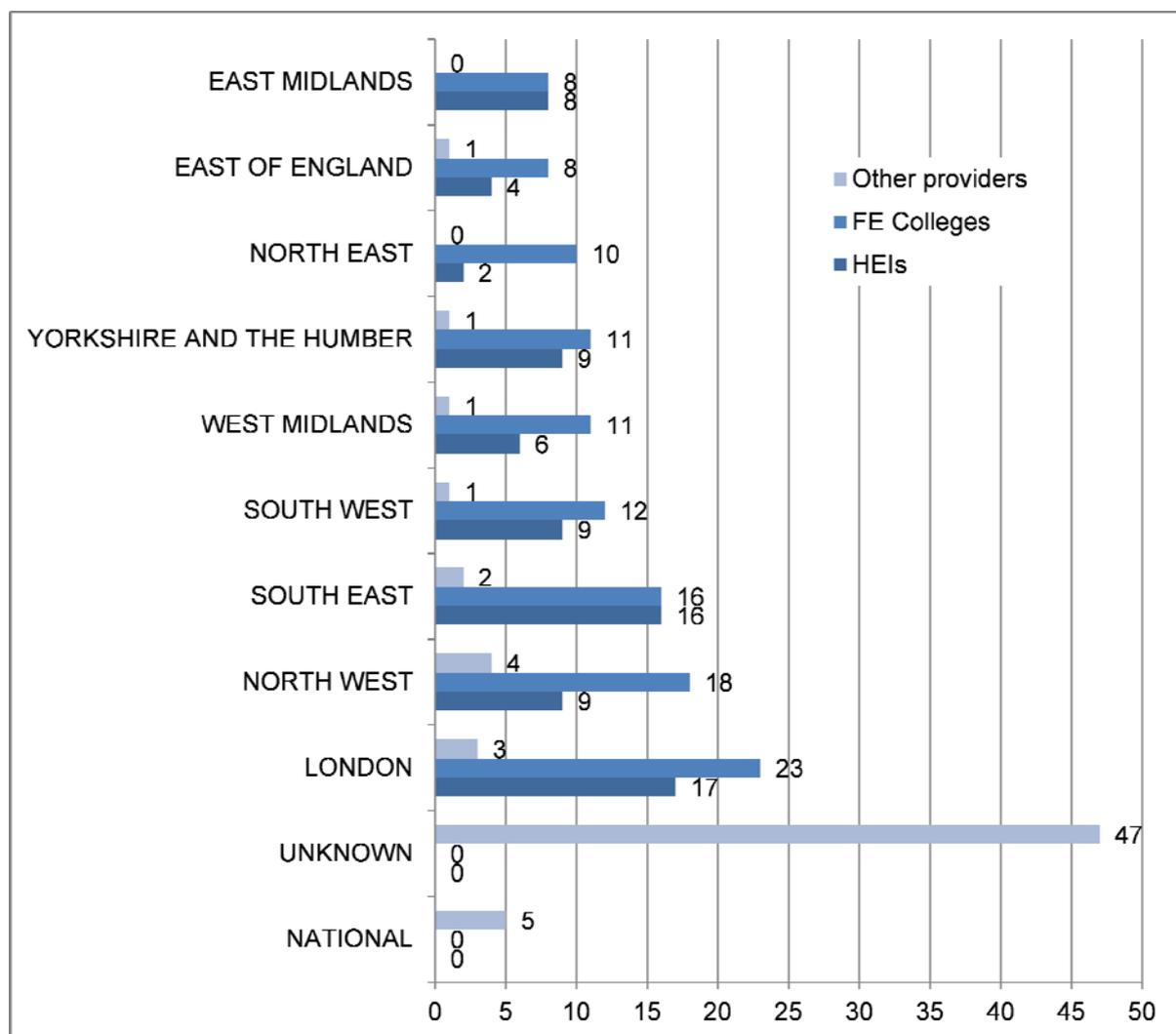
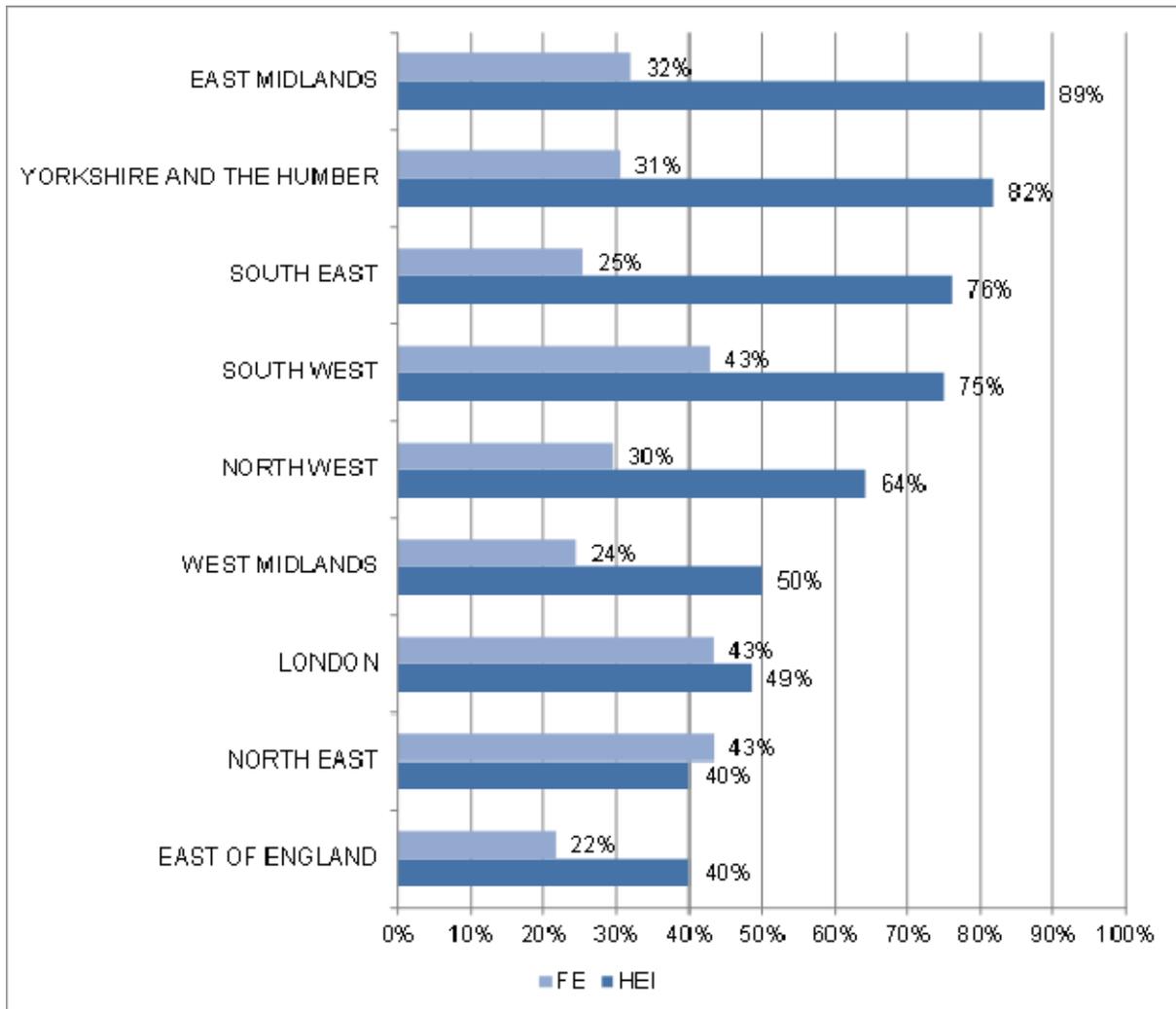


Figure 8 indicates that more than 80% of HEIs in the East Midlands and Yorkshire and The Humber provide non-formal enterprise education in HE, compared to the East of England, the North East and London where less than 50% of HEIs offer non-formal provision.

FE provision of non-formal enterprise education is also not evenly distributed in the regions – but the pattern differs from HEIs’ provision with the highest proportions providing non-formal enterprise education in the North East, South West and London, and the lowest in the West Midlands and East of England (less than 25% of FE colleges).

Figure 8: Proportion of non-formal EE providers by region



The main source of funding for university societies is HEIs’ own club funding, or in some instances, membership fees. Other sources for non-formal learning in HEIs include private / corporate sponsorship (Grant Thornton, Barclays, RBS and other banks, Ernst and Young, Deloitte, Law firms, Shell, media groups). Some of these employers also run separate programmes. There are few examples of sources of external funding for informal enterprise education activities in FE (examples include Subway, Peter Jones Foundation and ERDF).

Other public funding, for example from local authorities, ERDF and ESF are used in other providers. In addition there are examples of charity funding for third sector programmes such as the Prince’s Trust.

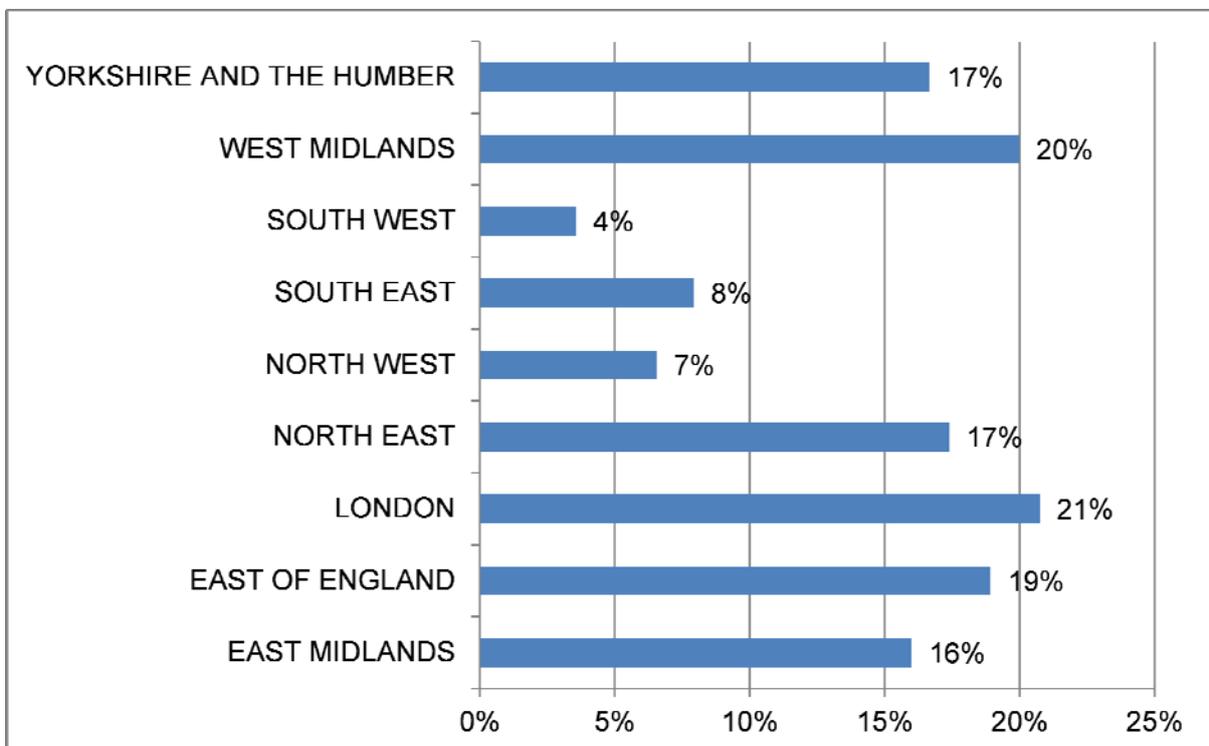
4.1.3 No provision

There is no evidence of any enterprise and entrepreneurship education provision in 12 HEIs (9%) and 51 FE colleges (13%).

Of the HEIs, the majority of these (10) are based in London or the South East and tend to be specialist institutions for medicine or the arts, for instance, the Central School of Speech and Drama or the London School of Hygiene and Tropical Medicine. The interviews with providers suggested that two specialist arts institutions offered some 'professional development' activities for those likely to be self-employed in the future. None of these HEIs are members of EEUK or other enterprise education networks.

The FE colleges without any provision of enterprise education are relatively evenly spread across the country – the greatest number (11) is in London and the fewest (1) in the South West. Figure 9 indicates that while about one in five colleges in London, the West Midlands and the East of England have no provision it is only about one in 12 colleges in the North West and South East. Non-providers are mixed including all types and sizes of colleges although quite a few appear to be former sixth form colleges/tertiary colleges and some have vocational specialisms that would provide self-employment or employment in SMEs (construction, agriculture, horticulture, landscaping). The interviews with two of the agricultural colleges suggested that embedded provision is offered through commercial enterprise activities.

Figure 9: Percentage of FE colleges NOT providing enterprise education by region



4.2 Nature, scale and type of enterprise education learning activities offered

4.2.1 HEI provision

Formal full qualifications

Formal full qualifications were provided in a variety of faculties in HEIs, with the majority of provision delivered in a Business faculty (61%). When Business faculties were combined with other areas (e.g. Business and Management, IT, Law, or Accounting etc), this accounts for the vast majority (80%) of all full formal qualification courses offered in HEIs. However, there are a small number of examples of HEIs delivering formal stand-alone qualifications through Arts faculties (including creative technologies, drama and media). Examples of these qualifications include: BA (Hons) Arts Enterprise; BA (Hons) Applied Drama with Enterprise and Entrepreneurship; and BA (Hons) Film, Animation, Music and Enterprise. Outside of Business and the Arts departments, a few examples of formal full qualifications were found in Social Sciences and Hospitality or Tourism faculties, for example offering a BA (Hons) Social Enterprise and in a BA (Hons) Tourism with Enterprise and Entrepreneurship.

Full qualifications were mostly full time degree courses (360 credits) although there were two examples of part time courses (worth 120 credits) and three examples of Foundation courses (worth 240 credits).

Credit-bearing units/modules

Individual units in HEIs were offered through more diverse areas of learning. Although the majority of units (66%) were still provided by Business (plus) faculties, other examples of formal units were included in engineering and construction, social sciences, and equine/veterinary or agriculture faculties. Examples of these units include:

- Entrepreneurial Management (as part of a BSc Business, Management and Public policy degree);
- Starting and Developing a Business (as part of BSc Agri-Business Degree);
- Rural Business Enterprise (as part of a BSc Equine Management degree);
- Finance Entrepreneurship (as part of a BA Tourism Management);
- Develop your own business plan (as part of a BA Arts and Events Management degree);
- Exploring Enterprise, Entrepreneurship, and Employability through addressing Societal Challenges (as part of a BSc Countryside Management);
- Enterprise (as part of a BA Fashion Marketing degree);
- Applied Business (as part of a BSc Animal Management (Business Management) degree).

In HEIs, units were predominantly offered as a part of a degree course (normal value of 360 credits). Of the 54 which stated how many credits these were worth, the majority (66%) were worth 20 credits or fewer. Of the remainder, 17% of the units offered were worth at least 30 credits. Generally speaking, these units were a mixture of compulsory and optional modules within a degree course and access was restricted to those undertaking specified degrees within the department. Only in a few cases are enterprise units available to all undergraduates.

36 HEIs (27%) stated that enterprise was embedded into their curriculum³⁵. However, some of these providers had no examples of formal education provision. A few examples of embedded activities were identified from the telephone interviews with providers.

Non-formal learning

Non-formal learning is characterised by a range of provision including student clubs and societies, pre-start up advice, awards, funding, training and other extra-curricular activity. There is also evidence of some online learning.

Non-formal learning is mostly 'ongoing' in the sense that it is a student club or society provision offered by the HEI throughout the year (57% of provision). Short term provision (i.e. between a few hours and one week) is also relatively well established (17% of provision). Some examples of this include:

- Global Entrepreneurship Week activities;
- Enterprise fairs;
- Business competitions;
- Start-Up in a Day; and
- Entrepreneurs Boot Camp.

Longer provision (i.e. one week to two years) includes longer term business competitions, Erasmus programmes, series of seminars and projects funded by employers and charities. Information on the access to this provision was generally not available. However, there are some limited examples of references to age (i.e. under 25), being a full or part time student or other eligibility criteria such as stage of business start-up.

4.2.2 FE Provision

Formal full qualifications

Within FE colleges, all examples of full qualifications and credit bearing units, where known, are delivered in a Business department, including for example Business and Management; Business and Accounting and Business and Administration departments. There was one example of an Enterprise course offered at Carlisle within the Learning Support department; this course was developed for students with

³⁵ Where it is mentioned in their strategies, values or objectives

additional support needs (learning difficulties) around the development, making and selling of a craft-based product within a workshop or retail outlet.

The majority of full qualifications offered were Diplomas (71% of qualifications including BTEC, Extended, Top-up and Subsidiary). In addition, there were examples of A-Levels, Certificates, Awards, HNCs, and Foundation Degrees (in FE) with a range of different awarding bodies (ILM, NCFE, OCR, NOCN, ASDAN, Ascentis) but there were at most two or three examples of each England-wide.

Most of these qualifications were offered at Level 3 (44%), Level 2 (34%) and Level 1 (7%).

The telephone interviews identified that a few FE colleges are offering Peter Jones Enterprise Academy (PJEA) courses although demand for these was declining, possibly because of the increase in providers offering the courses.

Credit-bearing units

The majority of credit bearing units are offered as part of a Diploma (55%) or A Level (33% – all offered as a part of A Level Business Studies). Some examples of these are:

- Business Enterprise (as part of A Level Business Studies);
- How to become an entrepreneur and develop a small business idea (as part of A Level Business Studies);
- Business Enterprise (as part of a BTEC Diploma L3 in Business); and
- Starting Your Own Business (as part of a BTEC Diploma L1 in Business and Retail).

While many do not state how many GLH or credits the unit is, the majority of the examples which were found state a value of 10-30 credits. Although many did not state who could do these units, access to these units appears to be generally restricted to students enrolled in the full course where it is an option.

Non formal learning

The vast majority (80%) of non formal learning in the FE sector is provided through extra-curricular activities, such as business competitions, enterprise events, Dragon's Den, Master classes, Young Enterprise, and National Enterprise Week. Most providers do not state how long they run for, although where this information is provided the majority last for between one day and one week. A minority run for the academic year. There are a limited number of student societies (eight across England) in FE colleges.

Most colleges do not state who is able to access this provision, but where this is stated, access is generally restricted to students at the college, with some restricted to the Business School or business students, or those studying for a Level 3 course. Some state further eligibility requirements, such as disability, age, and those at risk of NEET, where these are funding requirements. The telephone interviews confirmed

some additional examples of non-formal provision (enterprise clubs, competitions and enterprise champions) available to all learners.

There is some evidence to suggest that in FE non-formal enterprise education depends to some extent on self-organisation and external support (in particular European funding and private sector or employer contributions) rather than being supported by the college³⁶.

4.2.3 Other providers

Formal full qualifications

Other providers of formal enterprise education include Third Sector organisations such as: Peter Jones Enterprise Academy offering BTECs in Enterprise and Entrepreneurship Levels 2-5; Street Vibes Youth offering AQA awards and BTEC Levels in Interactive Use of Media; , and the Tiger's Sport and Education Trust (offering OCR award and certificates in Developing Entrepreneurial skills. Social Enterprise Europe (a limited company) offers a university foundation award in Enterprise and other private organisations include the Premier League Enterprise Academy and the Eastern Enterprise Hub.

Non-formal learning

In terms of non-formal learning in providers outside mainstream provision, there is a great deal of diversity in terms of the provision on offer. Most of this provision is short-term (between one day and one week) although there are a few examples of 6- and 12-month provision such as the Creative Pioneers Challenge and Erasmus for Young Entrepreneurs. Most providers do not state who is able to access this provision but there are some restrictions on age (Prince's Trust 18-30).

4.3 Teaching methods

4.3.1 HEI provision

There is a wide range of teaching methods used within HE enterprise and entrepreneurship education. This includes a variety of 'lecture-style' activities as well as more interactive and group styles of teaching. While lectures, seminars and tutorials are most frequent, case study based approaches and other practical and interactive activities are less so.

Formal provision

Formal provision has more passive approaches to learning. Most included lectures (around 75% of institutions) and seminar based delivery (around 55% of institutions).

However, there were examples of other teaching methods which varied and included:

- online based support and online activities (around 17% of institutions);
- project based activities, either individually or group based (around 16% of institutions);

³⁶ http://www.157group.co.uk/files/colleges_in_the_entrepreneurial_economy2.pdf

- group study;
- discussion based activity;
- practical activities and assignments; and
- case study based learning.

Informal provision

Informal provision, such as that provided through student clubs and societies, is characterised by more 'hands on' and practical based activities, such as workshops, competition based activity, events, networking and mentoring. Access to advice and funding information, as well as opportunities to win cash prizes (in the form of a bursary, loan or physical prize) is a key feature of these. Informal gatherings (socials) were also a common feature.

Guest speakers and workshops featured at about the same incidence in both formal and informal provision within HE.

4.3.2 FE provision

Methods of teaching reflected the more vocational focus of FE provision. FE provision has one or more elements of the following:

- Classroom/lecture based provision
- Group based activities
- Practical and hands on activities
- Workshops
- Visits to employers
- Assignments, presentations and project work
- Guest speakers
- Approaches including discussion work, 'challenges', role play and case studies.

FE provision has a higher proportion of provision with placement and work experience elements than HE provision.

Formal provision

In comparison to HE, approaches and methods of teaching in FE are more diverse. Group work and practical exercises, such as presentations, workshops and projects, appear to feature more frequently in FE provision. Providers also more explicitly state that assignments are required. The formal provision also includes more off site

activities, such as visits and trips to employers (as well as visits to Europe), placements and work experience.

Non formal provision

Informal provision is commonly characterised by competitions and advice and mentoring on practical elements of setting up a business. The provision also included one off events enabling students to talk to members of local businesses and industry and being able to access guest speakers.

4.3.3 Other providers

Learning is more commonly through support to individuals, online resources, mentoring, workshops and use of events to engage young people. Furthermore, provision also included exchange programmes with European countries.

4.4 Institutional provision

The data collected indicates that HEIs are more likely to offer both formal and non-formal provision – few HEIs (11%) offer solely non formal provision (Table 7). FE colleges are more likely to offer solely formal provision of enterprise education (48%) and, again few (9%) offer solely non-formal provision.

Table 7: Count of providers offering only formal, only non formal or both

	Formal provision (no informal)	Non formal provision (no formal)	Both	No provision
HEIs	36 (27%)	15 (11%)	65 (50%)	12 (9%)
FE Colleges	178 (47%)	34 (9%)	73 (19%)	51 (13%)
Other providers	9 (12%)	59 (74%)	0	N/A
Totals	223 (39%)	108 (19%)	138 (27%)	63 (12%)

The data collected (

Table 8) indicates (where known) that the majority of enterprise education in both FE and HE is delivered in a single faculty or department (nearly always in Business and Management). However, there is more diversity in terms of the offer within HEIs with two universities offering formal enterprise education in five or more departments (Southampton Solent University and the University of Huddersfield).

Table 8: Count of different departments/faculties offering enterprise education

Number of departments	HEIs	FE Colleges
1	60	41
2	35	1
3	6	0
4	0	0
5	1	0
6	1	0
Totals	103	42

4.5 Assessment

4.5.1 Trends

The findings from the mapping study indicate that formal provision of enterprise education is probably better established than earlier studies have indicated. For instance, the HE survey³⁷ of 2010 suggests that 60% of HEIs offer formal provision of enterprise education activities whereas this mapping suggests 71%³⁸.

For FE Colleges, the data is less reliable, but the Enterprise UK survey of FE colleges for the 157 Group³⁹ suggested that up to 34% of colleges offer full formal qualifications, (our data suggests 31%) and that 40% offer credit bearing units, compared to our findings of 59%.

This would suggest that over the last two years there has probably been both an increase in the reporting of and the recognition of the value of enterprise education. And, while the exploration of the demand for enterprise education is outside the scope of this study, these findings would indicate that the demand for courses or units with an element of enterprise education is also increasing.

4.5.2 Gaps in current offer: geography, type, level, amount

Aside from the observation that some providers did not appear to offer any entrepreneurial provision, including 12 HEIs (9%) and 51 FE providers (14%), there does appear to be a large and increasing range of enterprise education provision. However, the data indicates a number of gaps in the provision which are summarised in the table below.

³⁷ HEI survey 2010,

http://www.ncee.org.uk/publication/enterprise_and_entrepreneurship_in_higher_education.1.pdf

³⁸ Definitions vary however. The HEI Survey of 2010 lists formal provision as 'business and Management delivery' which may underrepresent delivery in other faculties.

³⁹ http://www.157group.co.uk/files/colleges_in_the_entrepreneurial_economy2.pdf

Table 9: Gaps in provision

	Summary of findings
Formal provision	<p>Formal full qualifications in enterprise education are offered in around 30% of providers in England (HE and FE) with a slightly higher proportion of FE providers (31%)</p> <p>FE colleges offer more formal provision (only) than a mixed offer including non-formal provision</p> <p>Around 60% of both FE colleges and HEIs offer a credit bearing unit in a qualification</p>
Non formal provision	<p>There is significantly more non-formal provision in HE than FE (61% compared to 31%). Most non-formal learning is provided through short courses or societies</p> <p>FE colleges may not have the same internal and external resources to support non formal learning</p> <p>There is more 'distance' between self-organised HE student non-formal enterprise education activity and HE formal learning.</p>
Geography	<p>While only 9% of HEIs and 14% of FE colleges offer no provision these providers are not evenly distributed. Specialist providers appear to predominate among those without provision</p> <p>London has least formal provision in both FE and HE while the East Midlands and East of England have lower than average levels</p>
Availability in institutions	<p>Business and Management faculties dominate provision in HE but more so in FE</p> <p>Many areas of vocational learning have no embedded provision</p> <p>Formal learning is available only to those on specific courses; non-formal learning is generally open to all students</p>
Scale of learning	<p>Many short courses are worth fewer than 20 credits</p>
Teaching methods	<p>Lecture type learning dominates provision in HE, less so in FE; practical methods are used</p> <p>Pathways of learning (for instance formal learning in a classroom followed by relevant work experience) are less clear in HE</p>

4.6 Key summary points

The mapping has found that:

- formal provision is better established than previous studies have indicated and it can be found in nearly three quarters of HEIs and FE colleges;

- non-formal provision is well established in HEIs, less well in FE Colleges; around 10% of providers only offer non-formal provision;
- HEIs appear to benefit more from external funding for non-formal provision than FE colleges;
- some providers state a commitment to enterprise education in their strategies but there is no evidence of formal or informal provision;
- slightly more FE colleges (14%) than HEIs (9%) offer no provision; there is no pattern to provide any explanation;
- provision in London appears to be less well established than in other regions—some of this may be attributable to more specialist and technical institutions in London;
- non-formal learning is very diverse in nature and offered by a large range of ‘other’ organisations;
- most units are restricted to learners on full courses within the same faculty;
- non-formal learning is more openly available to students;
- few providers have a wide range of departments offering formal learning, the majority only have enterprise and entrepreneurship education offered in Business and Management departments – this is a similar for embedded learning;
- pathways for learners cannot be established from the mapping – however, there are a number of instances where non-formal provision is not supplemented by formal provision and vice versa; and
- practical learning can be found in both HEIs and FE colleges but appears to be more frequently found in FE although passive approaches to learning predominate.

5 Conclusions and next steps

In this chapter, the findings in chapters 2, 3 and 4 are considered to address the aims of the study and the research questions drawn out for the literature review and mapping. Some implications of our assessment of the findings for policies around enterprise and entrepreneurship education and research into its benefits are considered. These reflect the gaps in the evidence base against the logic model and suggest areas that would benefit from future research. Some considerations for developing a future research strategy which would fill gaps are set out drawing on the findings of this research.

5.1 Summative consideration of the key findings

5.1.1 Quality of evidence

We have found that the international literature does not assess the range of enterprise and entrepreneurship education found in FE and HE:

- more studies cover short courses in school, FE and HE than full qualifications and non-formal provision, such as clubs and group projects;
- relatively more studies are focused on graduates than those undertaking VET; and
- there are too few studies to provide any robust basis for comparison between any features of enterprise and entrepreneurship education: short/long courses; standalone/embedded; formal/non-formal.

As a consequence there is not evaluative evidence about the full range of enterprise and entrepreneurship education activities found in FE and HE in England. Nor is there much evaluative evidence which contextualises the nature and extent of the enterprise and entrepreneurship education activities giving rise to the outcomes measured.

The evaluative evidence of enterprise and entrepreneurship education initiatives does not cover all the outputs, outcomes and impacts that they should be expected to provide as set out in the logic model. We have found that:

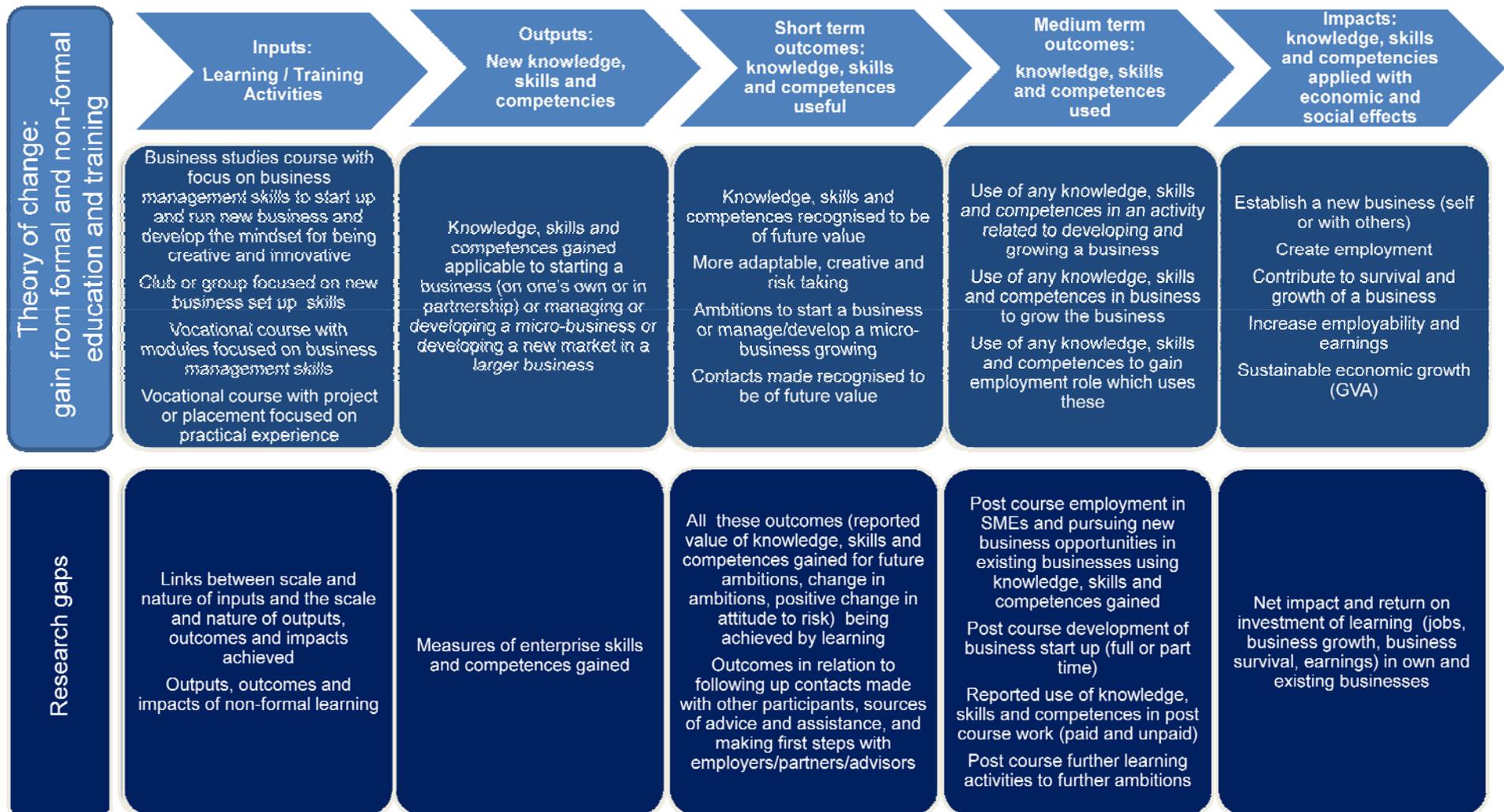
- relatively few studies provide evidence that enterprise and entrepreneurship education produce the positive outputs and short and medium term outcomes described in the logic model;
- those that do tend to focus on either outputs or short term outcomes and a narrow range of these, ie not generally encompassing attitudes and intentions or ambitions, so they are not comprehensive;
- only one study attempts to provide evidence of enterprise and entrepreneurship education which measures an economic impact; and

- medium term outcomes and economic impacts are generally evidenced only from studies which show a statistical relationship between them, such as business start ups, employability, and earnings and young people's participation in enterprise and entrepreneurship education. Some of these studies are relatively robust because they make comparisons with non-participants.

As a consequence there is evidence that enterprise and entrepreneurship education initiatives lead to the some of the outputs, outcomes and economic impacts that they are expected to generate for young people in FE and HE but this cannot be tracked from the education and training provided.

Figure 10 summarises what appear to be the key research gaps.

Figure 10: Logic model indicating key gaps in the research



We have found that the methods used to assess the benefits and impacts of enterprise and entrepreneurship education have not often provided robust evidence and have not attributed medium term outcomes and impacts to the enterprise and entrepreneurship learning undertaken by students:

- methods to successfully assess short and medium term outcomes have included before and after tests of knowledge, skills and competences, pre and post completion surveys of attitudes and intentions, and comparison groups;
- the only study which has measured any economic impacts of an enterprise learning initiative, the Flying Start evaluation, is not robust because it has not accurately estimated inputs or used a controlled sample of participants;
- best practice evaluation methodologies would suggest 'robustness' can be tested by a logic model and evaluation framework (such as the one developed for this study) with evidence of the following:
 - before and after testing of knowledge, skills and competences;
 - post completion surveys of ambitions and intentions or extensive controlled qualitative interviewing;
 - post completion surveys of actions over several years;
 - comparison groups at least for post completion comparisons;
 - an account of the inputs (including costs) and the activities in the initiative; and
 - an account of any further enterprise and entrepreneurship training (formal, non-formal and informal) received by participants and non-participants between post completion surveys.

As a consequence, to be effective in testing the economic impacts and the value of enterprise and entrepreneurship education evaluations would have to be longitudinal, recruit control groups and test/survey sufficient samples of participants and non-participants. This is described in the box below.

Ingredients of a robust evaluation of an enterprise education initiative

- Accurate monitoring information, including demographic information of participants and cost information (to feed in to later cost-benefit analysis)
- Large population and sample size
- Control group of non-participants with similar characteristics including educational experience
- Pre and post-intervention assessment of progress
- Longitudinal tracking of intervention and control group, over at least a decade, recording employment status, entrepreneurial activities, intrapreneurial activities,

Ingredients of a robust evaluation of an enterprise education initiative

- income and attitudes to enterprise
- Longitudinal tracking of performance of businesses where intervention and control group worked and created (to compare profit, turnover, growth)
- Statistical analysis to control for significance of other variables (e.g. socio-economic characteristics, contextual information, family background etc)
- Economic Impact Assessment (HMT Green Book) to obtain estimate of net economic impact

5.1.2 Literature evidence of outputs, outcomes and impacts

We have found that there are some positive outcomes of enterprise and entrepreneurship education initiatives which can be evidenced but they cannot be tracked through to economic impacts.

- there is some evidence from the international research literature that enterprise and entrepreneurship education in FE and HE increases relevant knowledge, skills and competences;
- there is strong evidence also that enterprise and entrepreneurship education in FE and HE affects attitudes, such as risk taking, and ambitions and intentions to grow businesses;
- there are no research studies showing evidence that enterprise and entrepreneurship education influences any first step actions;
- there is only evidence from two studies that shows that the knowledge, skills and competences gained from enterprise and entrepreneurship education are used to take action towards business start up and employment (medium term outcomes);
- but there is strong evidence of a statistical relationship between participation in enterprise and entrepreneurship education and new business start up, employability and business growth; although
- there is no robust evidence that actions arising from enterprise and entrepreneurship education have made a net contribution to new business start ups, survival, employability and business growth.

As a consequence, while the evidence suggests that enterprise and entrepreneurship education generally has positive benefits that should be expected to lead to some learners starting new businesses and making contributions to the growth of existing businesses, for example, the evidence does not conclusively show the attribution of this to enterprise and entrepreneurship education in either FE or HE. However, the effects of enterprise and entrepreneurship education on learners' knowledge, skills and competences and their intentions and ambitions support the evidence from the studies showing statistical

relationships between participation in enterprise and entrepreneurship education and economic impacts which have been found.

We have found no studies presenting evidence of different enterprise and entrepreneurship education initiatives having differential effects on outcomes and impacts. There is weak evidence that practical activity may stimulate vocational learners. As a consequence the evidence only shows that making enterprise and entrepreneurship education available in FE and HE has some positive effects which appear to have positive economic impacts.

5.1.3 Literature evidence of effective provision

We have found some evidence that:

- mandatory participation in enterprise and entrepreneurship education has a greater effect than optional participation;
- the greater availability and emphasis of enterprise and entrepreneurship education in schools and FE colleges may increase FE students' intentions to start a business; and
- opportunities for learning by doing, including participating in student enterprises, can be more effective than passive learning on taught courses, especially for FE students.

As a consequence we can say little about changing practice but the findings support greater availability of enterprise and entrepreneurship education to students, especially for those on vocational courses, and opportunities for practical learning.

5.1.4 Provision

We have found that the scope and scale of enterprise and entrepreneurship education has probably increased in line with the initiatives that have been promoted over the last few years:

- formal enterprise and entrepreneurship education is provided by the majority of FE colleges and HEIs;
- the formal learning is a mix of full qualifications and units; most of the units are limited to learners on specific courses and are small in terms of scale of credits;
- most HEIs and many FE colleges provide informal learning opportunities which are generally open to all learners;
- relatively few FE colleges and HEIs have a wide range of the formal and informal learning which some other providers offer; and
- some of the informal learning is supported by external funding in both FE and HE which may mean that its availability is unstable.

We have found that there is not an even spread of enterprise and entrepreneurship education in the FE and HE sectors:

- it is generally found in Business and Management departments in both FE colleges and HEIs both full qualifications and units;
- units in vocational courses can be found in some other vocational areas in HEIs and FE colleges (more broadly in HEIs than FE colleges) but these are only a small proportion of the areas of vocational learning offered;
- many vocational areas with high levels of self employed and small businesses appear not to have units provided; and
- there are some regional differences in the extent of provision that do not seem to be related to chance and the scope of institutions' learning offer.

We have not mapped enough detailed information about provision to discern if students have opportunities to build on their knowledge, skills and competences and gain support to realise their intentions although there is some evidence of pathways in vocational learning when supported by non-formal learning activities as well as continuity of provision from school to university (led by HEIs).

Some barriers to provision exist, such as gaining sufficient 'buy-in' from senior management and from faculties / departments (other than business or management departments) to the value of enterprise education, sufficiently qualified staff to embed this in the curriculum, and lack of learning time available.

Generally speaking enterprise education may be not 'sold' appropriately to learners and staff, and may therefore not be well understood outside of those who deal with it regularly. Despite this, demand may be increasing possibly influenced by its portrayal in the media.

The extent of provision may be underestimated because of the sources used but while it is growing it is not bedded into the learning offer of all providers.

5.2 Implications

5.2.1 Policy

The research appears to support a policy of encouraging and enabling students in FE and HE to participate in enterprise and entrepreneurship education, which is both formal and non-formal, to provide relevant attributes (knowledge, skills and competences) as well as relevant attitudes and intentions.

What it could question is whether:

- it should be largely available only to those who are pre-disposed (through their choice of a full qualification or course with enterprise and entrepreneurship education or participation in non-formal learning activities) since not all students are

exposed at school or have their intentions firmed up by the time they are in tertiary education;

- it should be more widely embedded in the delivery of vocational subjects in areas where students are likely to be self employed or working in SMEs
- learning by doing (such as projects, placements and learning enterprises) should be included in all enterprise and entrepreneurship education courses since these seem to increase the outcomes and impacts for students, especially those in FE;
- there are lessons that can potentially be translated across from the Welsh Government's Youth Enterprise Strategy;⁴⁰
 - Non-formal learning is but a substitute for formal learning where 'learning by doing' is not embedded in the curriculum of undergraduate courses; and
 - Higher Education Innovation Funding for universities' enterprise activities should use indicators about the longer term impact on graduate start-ups and effect on small businesses since the only indicator relating to enterprise and entrepreneurship education is start ups in two years for graduates who have received formal business/enterprise support from the HEI.⁴¹

Some FE providers are taking actions to ensure that all students are exposed to some form of enterprise education through embedding enterprise in the curriculum. This may be hard to achieve in HEIs where academic departments and individual academics have considerable autonomy over the curriculum. In FE with funding for students aged 16-18 moving to funding per learner based on their course instead of funding per qualification and the introduction of the Study Programme emphasising work experience this may become easier if enterprise education is perceived to be part of this preparation for work.

5.2.2 Research

Gaps in the research evidence that the literature review has uncovered would benefit policy development around enterprise education if they were filled so that:

- it is clearer what the added value of enterprise and entrepreneurship education is in school and then tertiary education to the journey between learning and making a living. It is largely studies which establish if there are statistical relationships which attempt this than longitudinal studies which can then assess attribution and estimate economic impact;
- it is evident that enterprise and entrepreneurship education leads to economic impacts;

⁴⁰ Department for Education (2010), Evaluation of Enterprise Education in England, Research Report DFE-RR015 noted that ensuring that every institution has a champion is considerably easier to achieve in Wales and other small countries compared to England because of the smaller numbers involved.

⁴¹ PACEC (2012) Strengthening the Contribution of English Higher Education Institutions to the Innovations System: Knowledge Exchange and HEIF Funding, A report for HEFCE

- comparative analyses of different inputs and activities can be undertaken. It remains largely unanswered whether full time, short and embedded courses and equally what content and teaching methods result in differential outputs, outcomes and impacts; and.
- it can be shown what are the differential net economic impacts of different inputs and activities, and equally what content and teaching methods have differential net economic impacts.

This would require, as priorities, studies of:

- enterprise education in FE as well as HE;
- different levels and types of enterprise education (significant component of full-time course, embedded, non-formal) to distinguish and compare outcomes;
- pathways which build up knowledge, skills and competences; and
- the links between enterprise and entrepreneurship education, educational attainment, starting and growing SMEs and economic growth.

Some of these needs can be combined but they need investment in some research over a longer period than has been the case. Findings should be communicated to those who may need to use it to gain buy-in within the FE and HE sectors.

Programmes building the capacity of teachers and trainers should not be a priority for evaluation.

5.2.3 Future research strategy

BIS and partners could in the short term take steps to improve the body of evidence and in the longer term build the evidence needed to support and direct investment in enterprise and entrepreneurship education. These are considered separately below.

Immediate and shorter term

Some coordinated action in the short term between BIS, the networks supporting enterprise education, RCUK and the funding agencies could be considered to build the body of evidence and facilitate research which demonstrates the links between education and training and outcomes in the logic model and the comparative value of different inputs of education and training.

It would help if providers could be encouraged to take action to record inputs, outputs and immediate outcomes from enterprise and entrepreneurship education initiatives. This could include:

- recording individual students' enterprise experiences more systematically so this would be available for future research. For example, Sheffield College plan to introduce a tool to record participation in enterprise education for every student by September 2014 through the tutorial system as part of their process of making

students more aware of the knowledge and skills they have acquired through formal and informal learning;

- measuring short-term outcomes in terms of changes in students' attitudes and intentions as a result of a specific course. This can be done along the lines adopted by the studies described in Table 4 with pre-course and post-course questionnaires and six-month follow-up questionnaires. A "model" questionnaire could be developed that can be used "off the shelf" by course providers, which would minimise research development costs and increase opportunities for drawing like-for-life comparisons of findings. For example, this would provide opportunities to compare the effectiveness of different types of courses and for different groups of students. We understand that the University of Cambridge has done some research along these lines but that findings have not yet been published. Some work was also been done by the Cambridge-MIT Institute through the Education and High Growth Innovation (EHGI) project which was funded by DTI between 2004 and 2008; individual academics involved in the project may still be conducting relevant research in the field.
- measuring the outcomes of students' experiences of taking part in a range of formal and informal enterprise learning. Providers could survey students' attitudes to entrepreneurship or perceptions of self-efficacy related to entrepreneurship on entry and exit from period of study at the provider. The Carnegie Measure of Students' Attitudes to Entrepreneurship could be used as a framework for developing such a measure. This would essentially replicate a before-and-after questionnaire but would try and identify the impact of the whole educational experience, rather than a specific programme and the comparative impact of different degrees and types of learning experienced.

It would also help if the providers who did test and survey could take steps to enhance what information they collect from their engagement of alumni. Many providers interviewed reported that they maintain contacts with alumni and many engage them in their enterprise education provision (such as inspirational talks, mentoring, employment and networking opportunities). Many also told us that their institution undertakes alumni surveys but that entrepreneurship is not systematically recorded. Some HEIs have started recording data on entrepreneurship outcomes because they have found that this is useful for marketing purposes, specifically in attracting international students. The Arizona University (Charney and Libercap, 2000) study shows how providers can use alumni surveys to demonstrate the effectiveness and impact of their programmes.

At the same time BIS and the agencies collecting student outcomes data could also revise and use the data collected to enable research to test statistical relationships between education and training and outcomes linked to enterprise education:

- Currently, destination of leavers' surveys do not differentiate between type of full-time employment (working for a company, working for an SME, self-employment, starting own business). The HESA Destinations of Leavers from Higher Education

(DLHE) Survey⁴², the main source of data about HEI leavers, does not make such a distinction nor does the HESA Longitudinal DLHE⁴³. FE Colleges are now tracking destinations of their leavers because the 2012 Ofsted Inspection Framework requires scrutiny of available data on learners' outcomes. However the main outcomes recorded are progression to further learning or employment - while progression to self-employment or to early entrepreneurial activity is not recorded. Enhancing data collection on leavers to include these measures would result in better data on the outcomes of their provision without any substantial effect on the cost of collecting data. However, as these surveys record progression up to three years (though most typically six months) after the end of their education, they only capture those choosing enterprise as the first step in the career. Entrepreneurs typically start a business several years after graduation once they have gained experience in business and secured sufficient start-up capital;

- The 2011/12 and 2012/13 HESA DLHE survey questionnaires included a new question which asks "How well did your overall experience in higher education prepare you for being self-employed/freelance or for starting up your own business?". We have not yet identified any analysis of the responses to this question – analysis of this data set could quickly provide high-level information on students' views on the impact of their HE experience on their self-efficacy for entrepreneurial behaviour; and
- Further analysis of existing GEM data for the UK and 2008 GEM data for countries at the same stage of economic development as the UK may provide further evidence of the link between participation in enterprise education and impacts (although not attributing the impact to a particular university programme) and differential impacts related to the nature and extent of enterprise and entrepreneurship education⁴⁴.

Longer term

To establish the added value of enterprise and entrepreneurship education, its role in progressing young people to starting a business and growing SMEs and demonstrating a net economic impact from the education and training initiatives requires a longer term research strategy and significant financial commitment. As indicated above in section 5.1.1 such research should be longitudinal and include a control group with outcomes and impacts measured from surveys and tests.

Quasi-experimental studies of education programmes which include a control group can test the attribution of any enterprise education activities and the difference they make. Surveys and tests ought to be done before, during and after the education and training for those who have had learning and those who have not. They have their limitations: maintaining contact with and a response from the sample over a long period, collecting

⁴² Destination of Leavers Survey Questionnaire 2011/12:
http://www.hesa.ac.uk/includes/C11018_resources/ENGLISH_HESA_Quest_Jan_13.pdf?v=

⁴³ The DLHE contacts graduates six months after graduation while the DLHE Longitudinal aims to find out what graduates are doing three years after graduation.

⁴⁴ There may also be value in investing in the inclusion of additional questions related to enterprise education in future UK GEM surveys.

corroborative evidence about outcomes and impacts, and matching the control group characteristics to those who have participated in enterprise and entrepreneurship education. Identifying a control group may become more difficult as more students are exposed to enterprise and entrepreneurship education.

The key questions to address the size and scale of such a study would be:

- what to track: how many types of enterprise and entrepreneurship education and what outcomes;
- what learners and what characteristics wanted for analysis: FE and HE; demographics and pre-qualification/education level; and
- how long to measure to account for impacts.

In this instance the sample would not need to be large (probably around 1,000) but surveying would have to continue for quite a few years to evidence the wider economic impact. Given the time lag between graduating with a qualification and making a significant contribution to a new business, it is not sufficient to study student outcomes only for a year or so afterwards. In addition it is important not only to track journeys into starting new businesses but also into building small businesses and contributing to the growth of established businesses using the knowledge, skills and competences developed.

The Danish longitudinal study outlined in section 3.3 provides an example of how a new longitudinal study could be designed. The survey is not tracking a very large number of students (400 are proposed) but will do so for seven years. Postgraduate students were selected because they tend to be older and therefore more likely to progress to enterprise outcomes within the time frame of the study and the study would provide some evidence within a few years. Tracking undergraduates from entry to HE would require a longer time frame to yield results. Cooperation and coordination with the Danish study would allow comparative research.

Alternatively, further research using the HECSU/IER Futuretrack longitudinal study that has been investigating the relationship between higher education and employment by following a large group of people who applied to university in 2005/2006 could be considered for HE students. The latest (Stage 4) survey was conducted in Winter 2011/12 and investigated outcomes 18 or 30 months after the majority of the group graduated. There may be opportunities for further analysis of existing datasets: self-employment outcomes have not been extensively analysed in research reports⁴⁵.

It is not clear whether the study will continue to track graduates after Stage 4. Investing in continuing this study may provide better data and do so more quickly than investing in a new tracking study of graduates. However, this study does not track graduates who participated in a particular enterprise education programme. It is thus most suitable to understanding why and when graduates make decisions related to self-employment. To “retrofit” Futuretrack for the purpose of investigating the impact of enterprise education a

⁴⁵ Purcell, K et al (2012), Futuretrack Stage 4: transitions into employment, further study and other outcomes, Futuretrack Research Team, The Institute for Employment Research, University of Warwick, HECSU

retrospective question along the lines of “Do you remember participating in Enterprise Education at university?” would be needed. The risks would be that respondents would not remember their university experiences; nor be able to identify that an experience they had was enterprise education so that impacts could not be attributed to a particular enterprise education programme (therefore conclusions about effective provisions could not be drawn).

5.3 Next steps

There is evidence that enterprise and entrepreneurship education initiatives lead to the some of the outputs, outcomes and economic impacts that they are expected to generate for young people in FE and HE but this cannot be tracked from the education and training provided.

This requires, as a priority, studies of:

- enterprise education in FE as well as HE;
- different levels and types of enterprise education (significant component of full-time course, embedded, non-formal) to distinguish and compare outcomes;
- pathways which build up knowledge, skills and competences; and
- the links between enterprise and entrepreneurship education, educational attainment, starting and growing SMEs and economic growth.

While BIS, stakeholders and providers can take some steps to increase the evidence base to meet these priorities, it requires a financial commitment to shape and support evaluations which would have to be longitudinal, recruit control groups and test/survey sufficient samples of participants and non-participants at regular intervals.

As a consequence we would recommend that BIS:

- consider with partners how current research and research funds could be focused on comparative studies of enterprise education and tracking the links between enterprise education and economic outcomes;
- consider how data collection could be enhanced to support this research;
- consider some opportunities to undertake longer term research; and
- develop the scale and scope of a quasi-experimental longitudinal study which could fill gaps in understanding to guide policy and curriculum development in FE and HE.

At this point, we can say little about changing practice in enterprise education but the findings support the greater availability of enterprise and entrepreneurship education to students, especially for those on vocational courses, and providing opportunities for practical learning.

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Annex 2 Literature data extraction form

Category	Review Field
Reference	Reference No
	Full reference
	Study title
	Author/consultancy/contact
	Year
	Source
	Country
	Peer review?
Study Overview	Study aim and objectives
	Commissioning organisation
	Does the study include evidenced assessment of impact or other outcomes? (Y / N) If N then stop review.
Initiative Overview	Name of initiative
	Education level (HE, FE, school, other)
	Aims and objectives of initiative
	Nature of provision - key features
	Target group for provision (age, gender etc)
Logic model - specific review questions	Inputs (costs, funding, time)
	Activities and policy intervention
	Outcomes (new knowledge, skills and competencies)
	Effectiveness / factors influencing outcome achievement
	Short term outcomes (knowledge, skills and competencies useful)
	Medium term outcomes ((knowledge, skills and competencies useful)
	Impact / long-term benefits
	Differential impact between different approaches, target groups or contexts
	Success measures and benchmarking tool-kits
	Evidence gaps

Category	Review Field
Study Results	Overview (if required)
	Evidence of long-term impact of initiative?
	Are impacts quantified?
	Methods for quantification (economic impact, CBA, SROI)
	Recommendations
Review of Methodology	Methodology (empirical, model, survey, lit. review, case study etc)
	Sample size and sampling method (<i>if appropriate</i>)
	Is attribution of education on impact clearly defined? (Y/N)
	Evidence of methodological and statistical robustness
	Evidence of bias and independence (e.g. is the study produced in-house?)
	Good practice methodology? (Y/N - why?)
	Innovative methodology (Y/N - why?)
Dataset (if applicable)	Data source(s)
	Time period / waves
	Potential use of dataset
	Available from / contact
Assessment	Use of study in Impact synthesis (Y/N)
	Reason for non-inclusion
	Use of study in methodology synthesis (Y/N)
	Reason for non-inclusion

Annex 3 Mapping database template

Table A 1: Mapping Template

Category	Description	Examples
Number	Individual record for each 'Type of Provision'	
Local Authority area	Location of main campus or HQ	
Provider or Institution name	Name of provider	<ul style="list-style-type: none"> • University of Birmingham • Carshalton College
Type of provider	Type of provider	<ul style="list-style-type: none"> • HEI • FE • Private provider • Corporate body or employer • Third sector • Other (stated)
Type of provision	Category of provision	<ul style="list-style-type: none"> • Formal stand-alone qualification • Formal credit bearing unit / module • Formal embedded provision (e.g. through strategy) • Non-formal • Other (stated) • None
Formal education		
Scale of learning	Range and scale of learning outcomes and size of qualification	<ul style="list-style-type: none"> • Full qualification • Credit bearing module / unit (include number of credits or percentage of overall course) • Number of guided learning hours • Project as a part of qualification • Embedded in provision (but not 'quantified' through credits etc)

		<ul style="list-style-type: none"> • Other (stated)
Qualification	Type and level of qualification	<ul style="list-style-type: none"> • BSc • A Level • BTEC • Apprenticeship • NQF level • Awarding organisation (for FE)
Course title	Name of course, qualification or module	Enterprise and Entrepreneurship in Business and Personal Finance
Non formal provision		
Type	Non-formal activity type	<ul style="list-style-type: none"> • Student club / society • Extra-curricular activity • Employer-led • Other (stated)
Scale of learning	Length and intensity of activity	<ul style="list-style-type: none"> • Period • Hours a week • Group or alone
Title of activity	Name of programme / initiative	<ul style="list-style-type: none"> • Global Entrepreneurship Week
Category	Description	Examples
Length	Length of course, or period of engagement	
Level	Level of course	<ul style="list-style-type: none"> • L2 • L3 etc or higher • (data should exist in previous column but needs removing and adding to next column)
Number of credits	Number of credits	<ul style="list-style-type: none"> • 20 credits • 120 GLH (minimum) • (see for example the http://register.ofqual.gov.uk/Qualification which states the number of credits or GLH per qualification)
Department	Department or faculty	Formal learning: <ul style="list-style-type: none"> • English Department

		<ul style="list-style-type: none"> • Faculty of Engineering • Curriculum area (if faculty etc not known)
Access to course	Whether a module is part of a course that can be accessed by solely people on the course or whether others from different departments or faculties are able to access it	Formal learning: <ul style="list-style-type: none"> • Humanities access (access to module restricted to Humanities students) • Open access (access open to all students)
Numbers of learners	Number of learners on course (if stated) or maximum entry number per year	
Activity	Description of activity, course content, learning and other aims	
Mode of delivery	Teaching or learning method	
Learning outcomes	Outcomes to be achieved	
Funding sources	Type of funding e.g. private sector, sponsorship, foundation etc	
Evaluation	Evidence of any internal or independent evaluation of the impact	
Verification or additional websearch info	Websearch to verify if other provision (not formally recorded on website) is taking place	
Consider for consultation	Y/N	
Contact details	For interviewing	

Annex 4 Stakeholder interviews

A4.1 Interviewees

- Andrew Turner - BIS
- Andy Penaluna – Enterprise Educators UK
- David Jarman - Enterprise Educators UK
- Paul Hannon – National Council for Graduate Entrepreneurship (NCEE)
- Tim Barnes – University College London (UCL)
- Maureen Tibby – Higher Education Academy (HEA)
- Fintan o'Donohue – Gazelle Group
- Beth Penwarden – National Association of College and University Entrepreneurs (NACUE)
- Jim Metcalfe - Carnegie UK Trust
- Janice Pittis – Essex University
- Alison Mitchell – Vitae
- Teresa Frith – Association of Colleges
- Tony Round - Young Enterprise
- Joel Blake - Den Members Club

A4.2 Topic guide

The interview topic guide was tailored to the organisation and its focus/interests but in general the interviews covered:

Evidence of impact

What is their understanding of the key evidence that demonstrates that entrepreneurship education in the sector they are familiar with has the desired positive impacts on the attitudes, abilities and actions of young people? Explore logic model outputs and outcomes as prompts

What programmes and initiatives in England and elsewhere which they are aware of are reckoned to have had or are having significant impacts in terms of the attitudes, abilities and actions of young people in relation to entrepreneurship? Explore logic model outputs and outcomes as a prompt to evidence supporting their views about the programmes and initiatives. Check that research quoted is known to us (against schedule); if not seek to source.

What is it about these programmes and initiatives that make them effective in having positive impacts? Explore the evidence supporting this and whether it is linked to the combination of initiatives, the depth of learning and what is embedded in mainstream education, for example. Explore transferability to England.

How could the evidence base be improved? Explore management information collected by the sector and by government, evaluation evidence sponsored by the sector and by government, and any limitations to making improvements.

Supply in England

What is the extent and depth of the different types of entrepreneurship education in the sectors of the market they are familiar with? Explore perceptions and knowledge of gaps in terms of type of provision, providers, geography.

How well is this meeting demand and needs for entrepreneurship education (type, depth, scale)? Explore factors affecting supply, including quality.

How well does provision match up to their understanding of the evidence of what works to have an effect on attitudes, abilities, and actions of young people towards entrepreneurship? Explore:

- what is missing and what is good about the current landscape;
- the extent that evidence of what is effective underpins what is provided and how.

Annex 5 Additional provider interviews – summary

A5.1 Project brief

A5.1.1 Rationale and purpose

Additional telephone interviews were undertaken as a follow up to the study for BIS to:

- review and critically assess available international literature on economic impacts of enterprise and entrepreneurship education initiatives aimed at higher (HE) and further (FE) education;
- carry out a comparative analysis of initiatives (impact, payback, context, transferability); and
- map the landscape of the provision of enterprise and entrepreneurship education initiatives in FE and HE in England.

The purpose of these additional interviews was to:

1. confirm and test the depth and breadth of provision that mapping suggests from the web and documentary sources used; establish the scale of any limitation/missing information which cannot be assessed systematically from supplementary calls to providers;
2. gain provider perspectives on the rationale of their provision in terms of supply (eg funding, teaching expertise, facilities) and demand factors (learners, priorities/fit with other learning offers to undergraduates and post graduates and income generation from research such as incubators and spin-offs);
3. gain provider perspectives on gaps and needs to increase supply, effectiveness and outcomes from enterprise education; and
4. explore the practicality and cost of measuring wider benefits and outcomes.

A5.1.2 Methodology

We undertook a total of 24 interviews consisting of:

- 12 FE providers
- 12 HE providers

In developing our samples we considered the following:

- Representation of providers with different levels of provision (“a lot of provision”, “some provision”, “little or no provision”); based on the information collected in our database through our mapping
- Mixture of provision types within each level; to include both formal qualifications and extracurricular activities;
- Balance of Gazelle Group colleges, 157 Group members and other colleges;
- Balance of EEUK members and other HEIs;
- Balance of large, general providers and small, specialized institutions.

The providers interviewed and the topic guide are listed in Annex 1.

A5.2 Research Findings

Objective 1: Confirm and test the depth and breadth of provision that mapping suggests from the web and documentary sources used; establish the scale of any limitation/missing information

A5.2.1 Depth and breadth of provision in HE

The interviews with HEIs which the mapping suggested offered little to no provision confirmed that:

- Two HEIs did not offer enterprise education activities;
- Two HEIs (specialist arts institutions) only provided enterprise education activity that could be described as ‘professional development’ for learners likely to have ‘portfolio careers’ (self-employment). This was offered to all students and in some cases was compulsory; and
- One HEI was exploring future provision around social enterprise.

Of the HEIs which the mapping suggested provided a range of enterprise education, the interviews found that:

- Formal enterprise education learning activities in other university faculties or departments (i.e. outside Business or Management schools) was still a ‘work in progress’;
- One of the HEIs offered enterprise units which were accessible to all undergraduates as an elective subject (not previously determined in the mapping); and
- Embedded activities were more common than previously determined in the mapping (for instance, activities for students on social science degrees).

All HEIs stated that ‘learning by doing’ approaches worked more effectively than theoretical approaches in creating enterprising skills, attitudes and competences but that this did not need to focus on business creation. “I am sceptical about the value of classroom based entrepreneurship teaching, but this needs to be supported by learning about the practical nature of business – but not necessarily around setting up a business”.

Non-formal enterprise education learning activities in HE were confirmed to be widely available, more open to students from other disciplines than formal education, and in some cases, supported by funding from external sources such as banks or European structural funds.

Although technically outside the scope of this study, two HEIs also provided additional enterprise education activities for school pupils (short courses leading to an early award and credits towards a degree before starting at the university) and post-graduates (additional units or qualifications, or access to Enterprise Hubs) which provided a ‘pathway’ and continual enterprise education learning opportunities.

A5.2.2 Depth and breadth of provision in FE

The interviews with FE colleges which the mapping suggested offered little to no provision found that:

- Two FE colleges did not offer enterprise education activities but did offer a range of employability support, work based learning or placements to students (typically to those who had been referred from JCP); and
- Two FE colleges offered embedded provision. These were both land based colleges providing learners experience with commercial enterprise activities in the college, which made up 15-25% of the formal course.

Of the FE providers which the mapping suggested offered a range of enterprise education, the interviews found that they confirmed what the mapping had found with a range of formal and non-formal provision being available (including Peter Jones Enterprise Academy courses), embedded provision, and comprehensive strategies for enterprise education and work experience. In addition:

- two (not offering PJEA) were offering discrete modules in enterprise for students across all curriculum areas as an elective unit (therefore requiring student sign up). However, one which had had funding reductions stated that discrete enterprise modules would be cut because it did not have the same status as basic skills in the core curriculum;
- one FE college offered enterprise education as a core part of the curriculum and introduced it into other curriculum areas (such as engineering) as a bolt-on to the main qualification; and
- several had non-formal provision open to all students included enterprise competitions, access to enterprise champions (funded through ESF), enterprise clubs and academies which had not been mapped.

A5.2.3 Reasons for missing information

It was assumed that the scale of enterprise education provision would be under-reported. This has been confirmed through interviews as demonstrated above and reasons for this include:

- inaccurate or out of date websites (particularly the case with FE but also in HE);
- embedded provision or enterprise education teaching methodologies not explicitly referred to in course descriptions (HE and FE);
- ‘hidden provision’ which may have been referred to in descriptions of course activity with different, less obvious titles or descriptions (in HE: employability support, ‘portfolio careers’, in FE: employability, apprenticeships or jobseekers support); and
- experimental activity, for instance introducing ad hoc enterprise education activities into academic or research focused courses.

Objective 2: Gain provider perspectives on the rationale for supply and demand in HE and FE

A5.2.4 Supply of enterprise education in HE

Among HEIs offering formal provision, all interviewees stated that the supply of enterprise education is driven by management or leadership within the institution. For some, this is about developing the reputation of the institution, both to prospective students and the local community as a part of their social responsibility. In some cases, this has been supported by a noticeable ‘trend’ for enterprise education, for instance, through government or education policy. Some institutions had conducted research to explore their ‘value added’ (e.g. asking questions such as “we are helping students into jobs but are we helping them to start their own business?”) and on this basis have developed entrepreneurship provision. Others stated that it was about developing the right mind-set of the graduate so that they would seek to work in SMEs rather than large corporations. Funding for enterprise education was not considered a main driver for provision, more that it was an enabling factor which helped to increase or widen either the supply or the participation of students in their (typically non-formal) activities.

According to the interviewees, current issues with the supply of enterprise education include not having the right level of support within the institution for enterprise education activities, including some scepticism about its value for all students (including those outside the business or management faculties). Other limiting factors include the lack of qualified teachers or professional development for teachers. Some have sought to address this by having specialist enterprise tutors or bringing in support from industry.

A5.2.5 Demand for enterprise education in HE

Some HEIs reported that demand for some elements of their enterprise provision, particularly non-formal provision such as business planning competitions, had not been as high as expected. In one provider, reasons for this were explored through a survey which determined that, while at university, many students did not want to start a business until

they had completed their studies and were more concerned with general employability skills. This suggests that enterprise education is not 'sold' appropriately to students.

One provider explained that students involved in formal enterprise education could be classified into three groups:

- A minority (around 15%) of students who have either already set-up their own business (alongside their degree, or managing a family business) or are first class students who are self motivated to pursue business creation;
- A minority (around 15%) who have little interest in business start up or enterprise education activities but who are participating anyway (e.g. because of compulsory attendance required or other factors); and
- A majority of students who would respond well to enterprise education activities if there were a better standard or quality of teaching, activities and support and an understanding that the skills applied to self-employment, partnerships and working in SMEs and developing new business opportunities in large employers.

This university is trying to focus its enterprise education efforts on the latter group where more progression may be made than with the other two groups.

Interviewees also noted that the increase in tuition fees may be increasing demand for enterprise education if there is a perception among students that enterprise education can increase employability and future earnings. The media is perceived to be having a strong effect at the moment.

A5.2.6 Supply of enterprise education in FE

All FE providers (particularly colleges which were part of the Gazelle Group) stated that having strategic or management leadership for enterprise education was a key driver. This included having enterprise education embedded into the core learning offer and a commitment from teaching staff. Limiting factors for this were stated as including the reluctance of some staff to 'buy into' the concept of enterprise education, especially in larger colleges where culture change could be a lengthy process. Most acknowledged that employer demand influenced provision of enterprise education but few were influenced by funding as a driver.

Colleges which offered little in the way of enterprise education were focused on providing basic employability skills or supporting progression into higher education. 'Enterprise education is not a priority'. A few stated that a failure of the school system requires colleges to teach basic skills such as English, IT and Maths, reducing time for other learning activities such as enterprise education within study programmes.

A5.2.7 Demand for enterprise education in FE

FE providers tended not to factor in the demand for enterprise education activities as an influencing factor for the provision of the courses. The reasons for this were varied:

- Many learners may not recognise the core skills and competences of enterprise education as being applicable to their course or profession and so some colleges stated it was about “leading horses to water”; and
- Some learners would be dissuaded from a course which had enterprise or entrepreneurship as being an explicit outcome – some would consider self-employment risky.

As the PJEA has expanded its course offering to 38 colleges, some colleges have reported a downturn in demand. Newer providers of PJEA have seen an increase in demand for these courses from learners who consider them to be a good introduction to working life (courses are delivered over a business day).

Objective 3: Gain provider perspectives on gaps and needs to increase supply, effectiveness and outcomes from enterprise education

A5.2.8 Current gaps in provision of enterprise education in HE

Some HEIs which were offering little in the way of enterprise education stated a future commitment to integrate it into the curriculum by revising current courses or considering offering non-formal learning activities.

HEIs offering a range of provision stated that gaps in enterprise education included provision of formal enterprise education in other departments or courses, in particular arts or science based studies where there is ‘a degree of reluctance’ to adopt any forms of enterprise education. They were keen to increase embedded forms of enterprise education. Many stated that the gaps were a product of teaching staff buy-in as well as insufficient staff with the appropriate skills to engage in enterprise education.

Other gaps relating to the content or structure of provision included:

- Having appropriate time for one to one mentors or tutorials for business planning – this was found to be particularly useful but resource intensive;
- Having a range of work/project placements in businesses to offer practical experience to students; and
- Including the most up to date information about business through expert speakers or other links to businesses or employers.

A5.2.9 Current gaps in provision of enterprise education in FE

FE colleges offering little explicit enterprise education were less inclined to accede there was a ‘gap’ in terms of enterprise education provision and that current provision around employability skills was addressing the needs of the learners.

Colleges with a commitment to providing enterprise education stated that the major gaps with current provision are in the funding of additional or discrete activities, such as online learning facilities or creating links with local universities, employers and communities.

Many acknowledged that teacher education and professional development should be improved and kept up to date.

Objective 4: Explore practicality and cost of measuring wider benefits and outcomes

A5.2.10 Value of measuring wider benefits and outcomes

Many HEIs record numbers of learners participating in courses or specific formal enterprise education activities but most do not keep records of those participating in non-formal activities or keep track of those who have experienced embedded enterprise education. Some keep alumni records but there are no examples of detailed studies exploring the value added by enterprise education or of the impact of these activities on learners or leavers in the short or long term.

This is similar for FE colleges – most colleges have destination data which can be used as a marketing tool. However tracking alumni is much less common than in HEIs - especially in the long term - although some colleges maintain links to previous students to engage them in future provision.

All of those interviewed stated that there would be a value in measuring the benefits and outcomes as it would support them developing and designing appropriate content, as well as marketing their courses to prospective students, employers and staff. However, many acknowledged the difficulties of doing this, from the practical nature of surveying alumni (where data, time and finance existed), designing appropriate research questions to capture impact, and attribution of activities to impact. Some colleges noted that while demand for enterprise education does not outstrip supply in the FE environment, more information on the effectiveness and impact of enterprise education would help to support better marketing of programmes of learning which would help to engage students as well as teachers.

One HEI stated that future enterprise education activities would need “selling” to academics and students who may not have a good understanding of the value. The interviewee also stated that exploration of whether enterprise education has an influence on academic attainment would also be of interest.

A5.2.11 Other initiatives recommended by providers

Providers suggested various initiatives which would help their institutions to extend and improve the supply of enterprise education. These included:

- long term research to demonstrate the value and impact of enterprise education on future employment as well as educational attainment – not solely focusing on business start ups as a measure of success;
- better connectivity and pathways between activities undertaken in school and university;
- support for longer term engagement with leavers and alumni;

- support for employers to provide internships or work placements;
- embedding enterprise education into provision to support innovation, creativity and other entrepreneurial skills;
- greater governmental assistance for SMEs and entrepreneurs (e.g. tax incentives) and removal of business start-up barriers;
- sharing learning through organisations such as NCGE;
- greater clarity around the definitions of enterprise / entrepreneurship / innovation / creativity in the context of how it is best “pitched” to students and teachers; and
- to maintain HEIF funding for support for enterprise activities (HE);

A5.2.12 Implications for the final report

The mapping of provision:

- the findings confirm the likelihood of under reporting of some provision, especially embedded provision;
- wider embedding and ‘open’ units may be more common than suggested; BUT
- the under reporting is not significant; and
- most embedded provision is linked to a course and to business related courses, not crafts, professional skills and trades or other curriculum areas.

Increasing the availability of and effectiveness of enterprise education:

- there are blockages to increasing availability
- the perception of and ‘selling’ of enterprise education activities may be a factor as well as understanding the benefits which the study has drawn from the literature review; and
- the existing networks can help to promote and support enterprise education.

Providers are not able or willing to track and test students undertaking enterprise education activities which could assist with future research.

Annex 6 Additional interviewees and topic guide

A6.1 Interviewees

Table A 2: FE providers interviewed

Name of institution	Name of interviewee
Oxford and Cherwell Valley College	Sally Dicketts, Principal
New College, Nottingham	Peter Roberts, Assistant Principal Enterprise
Sheffield College	Heather Smith - Exec director and Principal of Hillsboro College, special director of enterprise education
Amersham and Wycombe College	Marina Jackson, Head of Business and Enterprise
Barnet College	Christian Nicolaides, Head of Enterprise and Employment
Manchester Academy	Jane Delfino MBE, Director of Enterprise and Internationalism
Lancaster and Morecambe College	Stuart Rimmer, Director of Quality
Derby College	Louise Curd, Director of Enterprise and Innovation
Moulton College (Northamptonshire)	Name withheld
City and Islington College	Ian Sterling, Head of Higher Education
Riseholme College (Lincolnshire)	Bill Meredith - Vice Principal at Bishop Burton (which as of Aug 2012 includes Riseholme)
Yorkshire Coast College	Julie Moore, Assistant Principal and Strategic Lead for Enterprise

Table A 3: HE providers interviewed

Name of institution	Name of interviewee(s)
University of Nottingham	Prof Simon Mosey, Professor of Entrepreneurship & Innovation
University of Warwick	Prof Malcolm Hoare
University of Northampton	Prof Simon Denny Gill Gourlay
University of East London	Lindsey Cole, Head of Business Partnerships and Femi

Name of institution	Name of interviewee(s)
	Bola, UEL's Director of Employability and Enterprise
University of Cambridge	Shailendra Vyakarnam –Director of the Centre for Entrepreneurial Learning (CfEL) at the University of Cambridge Judge Business School
University of Durham	Dr Mathew Hughes, Reader in Entrepreneurial Management
University of East Anglia	Dr Haya Al-Dajani - Lecturer in Entrepreneurship and Small Business Management
University of Essex (not in sample but proposed by BIS)	Janice Pittis
Heythrop College	Michael Holman SJ, Principal and members of the Senior Leadership Team
Royal College of Music	Diana Roberts, Woodhouse Professional Development Centre Manager
Cranfield University	Professor Frank Horwitz, Director of the School of Management
SOAS (London)	Louise Roberts, Enterprise Manager
Royal Northern College of Music	Professor Linda Merrick, Principal

A6.2 Topic guide

A6.2.1 Introduction

- Introduce the study to the interviewee – purpose as a follow up to main report (i.e. main report mostly based on a passive web and document search, these interviews are there to help us to extend this research, recommended by X (if necessary), provide more information on the scope of the study (provision aimed at young people post 16, and including HE, FE, and other provision, business support excluded etc); and the reasons behind their provision;
- Confirm the main interests / focus of the organisation in relation to enterprise education; and
- Interviewee role within the organisation.

A6.2.2 Provision of enterprise education

Explore what we have found from the mapping about their provision to check its accuracy and add to the detail and the coverage.

In particular, enquire about:

- the depth of enterprise courses (glh, units, content) and teaching methods used;
- whether they have pathways of provision/joined up offer; if so what are they?
- the number of students and their access to the courses;
- the extent of use of optional or mandatory units in vocational courses (embedded) especially outside Business and Management departments);
- the financial and other support of non-formal learning;
- their views on what works in their provision
 - learning by doing
 - embedded learning
 - any evidence demonstrating any outputs and outcomes as in logic model
 - any evidence demonstrating difference in effectiveness for different groups of students;
- the importance of their context (champions, other enterprise and income generation activities, links to work placements, training and capacity building of educators) to achieving any of the positive outcomes in logic model;
- any risks to continuing or expanding what they do.

A6.2.3 Rationale for provision – supply and demand factors

Explore their rationale for what they do then explore supply and demand factors

- what in their experience, are the key determining factors behind the supply of enterprise education. Explore leadership/strategy, funding, teaching expertise, facilities, research, mandate. To what extent are any of these limiting (barriers) rather than influencing factors?
- what in their experience, are the key determining factors behind the demand of enterprise education. Explore what is driving learner demand (if this is the case); priorities/fit with other learning offers to undergraduates and post graduates (to what extent are enterprise units mandatory or optional); and need for income generation from research, such as incubators and spin-offs. To what extent are these limiting (barriers) rather than influencing factors? To what extent can demand be met?
- Collect any evidence of this (anecdotally or in research papers or strategies based on evidence etc).

A6.2.4 Gaps in their provision

- In the light of this discussion, what are your perspectives on the gaps or shortfalls (i.e. between supply and demand) in your provision both formal and non formal?
- To what extent is there are need to increase supply (formal and non-formal)?
- To what extent are outcomes expected not achieved because of the quality of provision (eg glh, teaching methods, progression, support)?

A6.2.5 Practicality of measuring outcomes and impacts

Explore how they measure, record and monitor inputs, e.g:

- No of students participating
- No of departments participating
- No of teaching staff trained
- Budget allocation for EE

Explore how they assess outcomes from enterprise education if at all (qualifications attained, competences etc).

Explore practicality and cost of measuring medium term and long term outcomes and impacts in logic model: what data do they already collect on alumni? Opportunities and costs of extending alumni surveys or introducing new ones?

Explore their perception of value of demonstrating impact (prompt: ability to obtain government funding, recruitment of students, fundraising from alumni or business).

A6.2.6 Finally

What initiatives (support from government or other bodies) would help your institution to extend the supply and improve the quality of enterprise education? What should be the priority? What would make the most difference?

What actions or support would help your institution evidence the impact of enterprise education?

Any other comments?

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