Beta: an experiment in funded undergraduate start-up

Paul Jones, Kellie Forbes-Simpson, Gideon Maas and Robert Newbery

Abstract: *This paper reports on an evaluation of a funded undergraduate project designed to enable student business start-up. The programme, entitled 'Beta', provides undergraduate students with £1,500 of seed-corn funding. The key objective of the project is for the participants to exit it with a viable and legal business entity through which they can start trading on completion of the course. The study adopts a case study approach and evaluates all aspects of the Beta programme, the actors involved and its processes and practices. The authors examine the development of the project and the challenges and hurdles that were identified and overcome to realize the project's goals.*

Keywords*: Beta; funding; seed-corn; student start-up; undergraduate business*

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As the UK emerges from recession, entrepreneurship activity is being mooted by politicians as a panacea for generating employment and economic prosperity on a global basis (Kuratko, 2005; Matlay, 2005; Fayolle *et al*, 2006; Nabi *et al*, 2006, Siegel *et al,* 2007). Indeed, it could be argued that ongoing cuts to the UK's public-sector provision makes increased entrepreneurial activity an economic necessity (Acs and Szerb, 2007). Previously, Baldassarri and Saavala (2006) have identified the need for more people to undertake business start-up, while Rae *et al* (2011) and QAA (2012) have suggested that all students need to acquire an enterprising mindset and skillset to prepare them for employment.

In recent years there has been increased global interest in entrepreneurship education, which has resulted in a proliferation of higher education (HE) programmes in the discipline (Klapper, 2004; Pittaway and Cope, 2007; Jones and Jones, 2011; Raposo and Do Paço, 2011). Despite this growth, there is ongoing debate about the effectiveness of entrepreneurship education and there are calls for further evidence to validate its impact (Matlay, 2005).

Several studies have focused on measuring 'soft' impacts such as positive changes in entrepreneurial attitudes as a result of an entrepreneurial education experience (Krueger *et al*, 2000; Peterman and Kennedy, 2003; Souitaris *et al*, 2007; Packham *et al*, 2010; Jones *et al,* 2013). While such studies are informative, economically sustainable graduate start-ups, as a consequence of an entrepreneurial

intervention, will remain the key measurement for entrepreneurial education (Rasmussen and Sørheim, 2006). The literature remains nascent; but it is essential that entrepreneurship programmes can clearly enable and support graduate business start-up as part of their offering. In terms of entrepreneurship education, the present study draws on the QAA's definition of 'enterprise and entrepreneurship' as focusing 'on the development and application of an enterprising mindset and skills in the specific contexts of setting up a new venture, developing and growing an existing business, or designing an entrepreneurial organisation' (QAA, 2012, p 6).

This study presents an evaluation of an extra-curricular, funded undergraduate project designed to enable student business start-up. The project, entitled 'Beta', provides undergraduate students with £1,500 of seed-corn funding with which to initiate the business start-up process. The key objective of the programme is for the participants to exit Beta with an economically viable and legal business entity which will offer the genuine prospect of a career in self-employment post-graduation. The study offers an evaluation of the development and impact of this innovative project and the challenges and issues that were encountered and overcome to realize its goal.

Literature survey

Graduate unemployment rates in the UK remain high at 4%, whilst the inactivity rate (the percentage out of the labour force – for example, not employed or unemployed) is 9% (ONS, 2013). The development of entrepreneurial skills and knowledge is thus becoming a priority for economic policy makers seeking to generate an enterprising and innovative society (Henry *et al*, 2005; Autio *et al*, 2014). Greene and Saridakis (2007) found that there was a mismatch between skills acquired at university and those required of graduates, and that entrepreneurial skills were poorly developed in the HE sector. Previously, Deakins and Freel (1998) and Cope and Watts (2000) have discussed the need for organizational learning, including the capacity to reflect and learn from one's mistakes. Negative experiences can occur during entrepreneurial activities and have an effect on the attitudes and emotions of owner–managers (Cope, 2003). Entrepreneurship education must therefore support and encourage students to experience these activities and learn from them (Shepherd, 2003). New guidelines have emerged in the UK (QAA, 2012), intended to guide the development of the entrepreneurship education curriculum, with increased emphasis on enhanced employability and self-employability career options post-graduation. Kothari and Handscombe (2007) and Andrews and Higson (2008) suggested that universities should offer their graduates practical, real-life skills that will empower them for their future careers. In a UK context, David Cameron, the British Prime Minister at the time of the Coalition Government, identified entrepreneurial activity as the means of achieving economic recovery in the UK, envisaging

> '. . . a country where new businesses are starting up on every street, in every town; where entrepreneurs are everywhere.' (Cameron, 2011)

Recent literature has proposed that universities should play a central role in encouraging entrepreneurial activity (Der Foo *et al*, 2005; Clarysse *et al*, 2011; Grimaldi *et al*, 2011); while Matlay and Carey (2007) suggested that most industrialized countries have witnessed a significant proliferation of the provision of entrepreneurship education (Morris *et al,* 2013). Jones and Iredale (2010) posit that this is necessary to help address the need for a trained, skilled workforce able to operate in a more flexible labour market. Universities must therefore play a central role in encouraging entrepreneurial activity (Di Gregorio and Shane, 2003; Russell *et al*, 2008).

Hannon (2005) identified that the HE sector has a critical role in developing the levels of motivation and capabilities of graduates to engage effectively in entrepreneurial activity, and the employment destinations of the graduate population thus remain a subject of interest (Holden and Jameson, 2002). However, Nabi *et al* (2006) and Holden *et al* (2007) identified the need for more detailed research in the graduate entrepreneur area. Kolvereid and Moen (1997) found that graduates with an entrepreneurship major were more likely to start new enterprises than other graduates, while Lange *et al* (2012) found that taking entrepreneurship courses increased the amount of business start-up capital raised, although these authors also suggested that neither taking entrepreneurship courses nor learning how to write a business plan had any effect on the subsequent operating performance of the business.

Greene and Saridakis (2007) noted that graduate entrepreneurs were more likely to be male, older and from the arts/humanities disciplines and to have parents with entrepreneurial experience. Somewhat in contrast, Galloway *et al* (2005) suggested that graduate start-ups are likely to have a longer term outcome in terms of survival and growth for science/engineering students.

Low rates of graduate entrepreneurship (only about 4% of UK graduates are entrepreneurs) could be a result of a lack of awareness of the entrepreneurial career

option. For example, the CIHE–NCGE–NESTA (2008) report noted that because graduates will often attempt to start an entrepreneurial venture around the age of 30, universities should assist their alumni by providing support services such as marketing research. Bennett and Robson (1999) noted that the use by small businesses of external advice is often dependent on the size of the business, with micro-enterprises using advisory services least frequently. Greve and Salaff (2003) recognized that social relations and networks play a significant role in establishing an enterprise. Robson and Bennett (2000) suggested that family or friends act as a regular source of advice for many micro- and small business owner–managers, in particular where sensitive issues are involved. Greene and Saridakis (2007), Matlay (2008) and Pickernell *et al,* 2011) confirmed this and suggested that the most likely sources of advice and guidance for graduate entrepreneurs are informal, involving family, work colleagues and social networks, as well as universities.

However, Hegarty and Jones (2008) suggested that there is still considerable work to be done to develop social networks for graduate entrepreneurs. They also noted that social networks for graduate entrepreneurs are dependent on industry experience and the effective acquisition of capital. The literature, however, claims that graduates have been poorly prepared for future business activity (McLarty 2003; Pittaway and Cope, 2007; Wilton, 2008). Furthermore, if graduates have developed awareness of entrepreneurship, they often do not have a support network for their enterprise. This may be a considerable problem for young graduate entrepreneurs with minimal prior work experience, with the consequence that even if they have an entrepreneurial intention, a lack of access to networks will restrict business start-up options (Birley, 1985). Chrisman and McMullan (2004) concluded that it is possible to create awareness by substituting networks for brokers.

According to Robson and Bennett (2000) and CIHE–NCGE–NESTA (2008) there are several sources of business advice and resources, both inside and outside universities, for graduate entrepreneurs. These include courses offered by universities, and formal business support agencies, business associations, banks, solicitors, accountants and external business professionals. In the literature, access to and lack of finance is also cited as a particular barrier to entrepreneurship (Fielden *et al*, 2000). Research by GEM UK on a sample of some 32,500 working age adults in the UK revealed that obtaining finance was the largest barrier to graduates starting a business (GEM, 2007). Fielden *et al* (2000) suggested that where entrepreneurs are unable to obtain finance they often have to resort to personal loans and, where possible, re-mortgaging their own homes. Greene and Saridakis (2007), however, claimed that there does not appear to be a finance gap for graduate entrepreneurs, because such individuals may find it easier both to access and raise finance than non-graduates, due to graduates having enhanced skills and knowledge (Fraser, 2005). There is a need for a greater understanding of the effects of access to finance on graduate entrepreneurship. There are many HE courses on how to start and finance a new business (Shane, 2003), and it has been found that, for entrepreneurial knowledge prior to entrepreneurial education, knowledge of finance was generally poor but that awareness of finance improved considerably following entrepreneurial education (Matlay, 2008). We must therefore consider what processes within the discipline of entrepreneurship education enable business start-ups to occur.

Entrepreneurship education processes to enable start-up

As already noted, entrepreneurship education programmes have proliferated in the last decade, both in the UK and globally. Best practices have emerged as key mechanisms to support business start-ups. For example, Huffman and Quigley (2002), Russell *et al* (2008) and Jones and Jones (2011) noted that business plan competitions provide a mechanism for new business start-up and for encouraging entrepreneurial ideas, talents and potential. Der Foo *et al* (2005) noted the role of these competitions in the development of team-building skills and using new technologies. Furthermore, Huffman and Quigley (2002) suggested that such competitions potentially link entrepreneurs with sources of funding. Activities such as business skills development, team-building, mentoring, judges' feedback and networking are key elements of an effective business planning competition (Russell *et al*, 2008). Atchison and Gotlieb (2004) noted that business plan competitions offer the opportunity to acquire and enhance generic skills and practical knowledge concurrently. The development of both is essential for developing quality graduates with self-employability competencies valued by both the private and public sector (Bowden and Marton, 1999). Russell *et al* (2008) suggested entrepreneurial skills development, increased self confidence and risk-taking propensity, access to mentors and networking opportunities as fundamental components offered by effective business planning competitions. Equally, Mason and Arshed noted that the acquisition of real world experience was important to both SMEs and employers (Mason and Arshed, 2013).

We can conclude that the provision of business competitions can be considered beneficial to graduate

business start-up. Jones and Jones (2011) summarized best practice as ensuring such competitions are compulsory and embedded in and across the curriculum. The competition is thus made relevant and students will understand its importance and commit to it. In addition, dedicated university staff should support and manage the competition, to help create institutional focus, stakeholders and internal commitment. There should be provision of launch capital to incentivise and provide realism; and appropriate business mentor support should be provided, with both internal and external advisors. University systems should provide legal protection and appropriate advice regarding health and safety implications, trading practices, insurance, intellectual property etc. Finally, with regard to business planning competitions, best student practice should be recognized by the award of prizes to reward innovation and creativity. It is therefore important that systemic best practice is imbedded into systems to facilitate graduate start-up.

Pre-incubator systems

Pre-incubators are a facility for supporting nascent entrepreneurs, offering an environment in which to develop and test a nascent business idea (Albert and Gaynor, 2006). The literature in this area suggests the barriers to start-up are, typically, lack of capital; limited relevant knowledge and skills, including personal skills; insufficient market research; inferior management skills, including financial management; and ignorance of the worth of intellectual property (USINE, 2002). The 'pre-phase facility', or pre-incubation stage, offers a means of overcoming these obstacles. Voisey *et al* (2013) noted that pre-incubation is the starting point of a longer process of development, consisting of three stages, for a new business:

(1) Pre-incubator stage – ideas and teams are nurtured;
(2) Incubator stage – once there, a business plan is prepared; and
(3) Post-incubator stage – when enterprises move out to 'grow-on space' (Broadfoot and Sheen, 2002).

USINE (2002) confirmed the importance of pre-incubators in serving as a mechanism for filtering out non-viable businesses. The presence of pre-incubation services linked to universities can also encourage an entrepreneurial awareness and stimulate entrepreneurial activity (Dickson, 2004). Pre-incubators focus on the entrepreneur with ideas/innovations rather than assisting businesses that are already established (USINE, 2002). Pre-incubation facilities have been initiated by many HEIs, with as much diversity as 'standard' incubators (Voisey *et al*, 2013). The pre-incubation process provides the nascent entrepreneur with the support necessary for the development of the business idea and plan, building up the required resources for the creation of a viable business, and then testing the market.

Typical pre-incubator services are summarized in Figure 1: as can be seen, the incubator services provide minimal-cost services to support the business start-up process. For HEIs such provision can be seen as an early stage incubator to enable potential owner–managers to test and evaluate the viability of a business idea. Such provision has become popular, with widespread deployment across HEIs (Jones *et al*, 2013). Nascent entrepreneurs are admitted into pre-incubators with three potential aims. First, there is the acquisition of the skills required to operate a business venture effectively and to perform a market test of their product or services before progressing either to independence or further incubation. Second, there is market testing, which involves purchasing, production and sales, providing an opportunity for the entrepreneur to test and enhance necessary business skills (USINE, 2002; Voisey *et al*, 2006). Third, there are benefits to be gained from in-house advisory services – although other agencies may be called on to provide advice or training (Voisey *et al*, 2006).

On completion of the pre-incubation process, the incubatees should be able to start a business, given a successful outcome from market testing, based on a robust and valid business plan, and to monetize the idea and, if appropriate, potentially seek an alliance with a venture capitalist (Halt *et al*, 2014). Incubator facilities of all types are typically measured with regard to objective outputs – for instance, the number of successful enterprises 'graduating' from the incubator and the levels of income generated over a given period are clear and necessary metrics. Softer, more subjective outcomes manifest themselves through the positive effect the experience may have on the learning and development of entrepreneurs, providing a basis for improved employment opportunities and a possible future return to enterprise (Voisey *et al*, 2006).

Pre-incubators thus focus on enabling would-be entrepreneurs to learn about and engage with the fundamental aspects of business start-up: business incubators, in contrast, focus on taking up businesses that have experienced these 'basics' and are ready to move to the next level of development. There is therefore a need to embrace best practice from business incubation as part of experiential-focused enterprise education. It is clear that there is selection of literature from business competitions and incubators illustrating

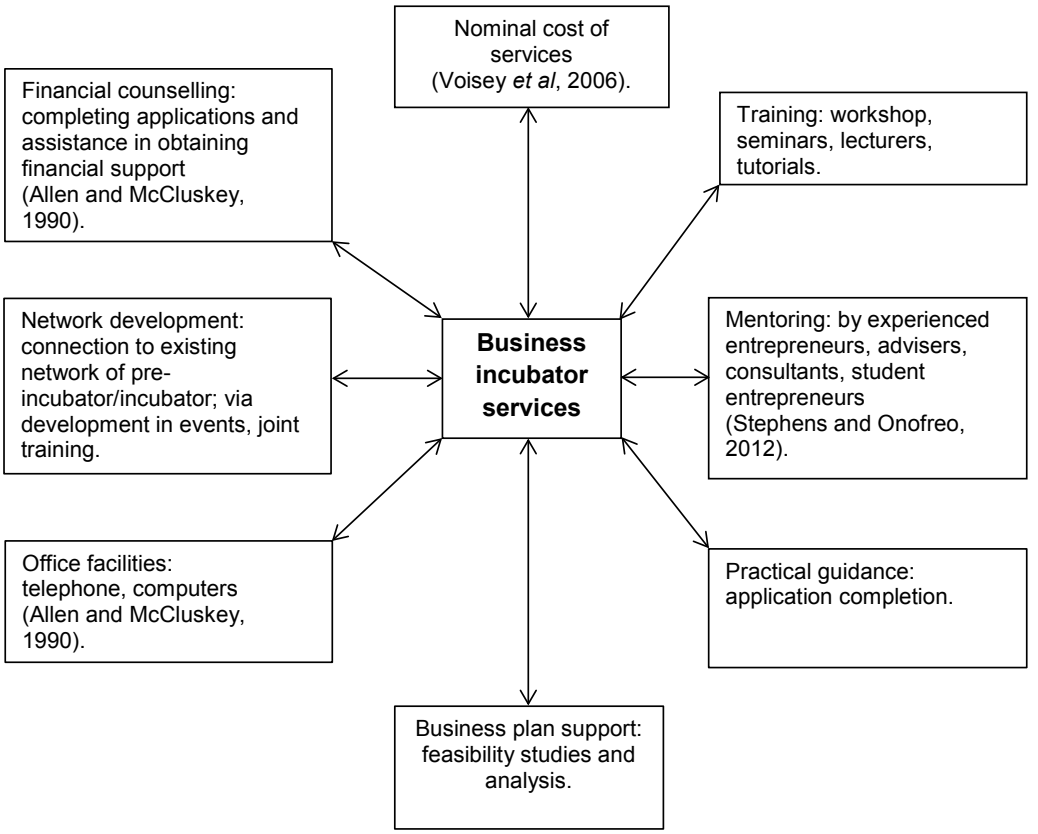

Figure 1. Business incubator services.

best practice in enabling graduate start-up. This present study will seek to identify the impact and best practice inherent in the Beta project.

Approach/methodology

The study used a case study approach and evaluated all aspects of the Beta project, the actors involved and its processes and practices. Eisenhardt (1989), Yin (2003), and Eisenhardt and Graebner (2007) support the use of a single case study methodology, regarding it as a comprehensive, rigorous and coherent approach which can add significantly to a body of knowledge. The case study method enabled 'how' and 'why' questions to be asked, in order to understand the nature and complexity of the processes being undertaken (Benbasat *et al*, 1987) due to its tradition of capturing rich contextual data (Levy and Powell, 1999) and enabling in-depth examination of the subject (Jones *et al*, 2014).

A two-stage data collection process method was used: first, an electronic survey of the participating students was carried out, to measure the effect of and attitudes towards the Beta project; and, second, semi-structured interviews with academics, the project team, Entrepreneurs in Residence (EiRs) and students were used to gain a more detailed appreciation of its impact. A qualitative data collection process was used: key actors interviewed included the Centre Director, the Project Manager, Academics (3), EiRs (3), and applicants and participants (15). The EiRs are external business people, employed on a part-time basis (one day per week) by the Centre and act as mentors for Beta applicants. All of these participants were selected because of their involvement in the development and day-to-day operation of the project. The Beta applicants were volunteers who chose to undertake the programme as an extra-curricular activity.

A web survey was developed, using Survey Monkey© software, to examine the impact of and attitudes towards the study (Collins, 2003). For the qualitative process, two interview guides were created, using a common template: one for university staff involved with the project, and one for applicants. This enabled valid cross-group comparisons to be made (Jones *et al*, 2013). Both the web and semi-structured instruments were evaluated by external academics independent of the research team (Beecham *et al*, 2005). Suggested changes – typically, to improve the readability of the research instruments – were subsequently adopted.

Face-to-face personal interviews were preferred over other data collection methods because they enabled the interviewers to probe and clarify answers (de Leeuw, 2005). The research instruments were designed to elicit responses from all parties on the value, experience and impact of the Beta project. The data were collated and analysed by the research team and used to develop an understanding of the impact and effectiveness of the programme.

A semi-structured research instrument was developed, with a set of open-ended questions, which allowed the respondents to talk at length about the topics (Johannessen *et al*, 1999). These questions were used as prompts for each interview, ensuring no variation from the research focus (Poon and Swatman, 1999).

Applicants were contacted by e-mail and invited to participate in the study: 15 of 18 programme applicants agreed to do so. Respondents completed the electronic survey and then undertook the semi-structured interview: interviews were typically between 40–60 minutes in duration (Maznevski and Chudoba, 2000). Staff and programme applicants were interviewed by a team of independent researchers not involved in the Beta programme, to avoid the possibility of respondent bias (Dillman, 1978). On request, Beta participant anonymity was protected by the use of a coding system and so managers of the Beta programme were not able to link quotations to individual participants (Fox and Tracy, 1986). The coding system used coded individuals thus:

- Beta participants: (BP, A–O);
- Academics: (A,1–3); and
- EiRs: (1–3).

The research study also secured internal ethical approval by submitting the research proposal, which confirmed that participation in the study was optional and that all respondents' contributions were anonymized (Bell and Bryman, 2007), to the university research committee. To improve the validity of the research, each respondent was provided with a transcript of their interview and asked to confirm and approve its content (MacLellan, 2001). The contents of all the interviews were then compared and contrasted, to identify key themes associated with the study. This involved a process of data reduction, display and conclusion drawing and verification (Miles and Huberman, 1994).

Description of the Beta project

The project involves a two-stage process. During the first stage, the Centre promotes the Beta project through presentations to student groups and invites applicants to attend an informal interview regarding the possibility of entering the scheme. Applications are welcomed from groups and individuals: it is recognized that a viable business entity could require a collective or team effort to increase the levels of knowledge and expertise involved. During the initial interview, early conversations focus on the personal attributes of the applicant(s), their interests and potential business ideas. If participants remain interested following the interview they can progress to the second stage, at which the Beta programme takes students through the process of developing a concept and turning it into a viable business venture. Applicants complete an application form outlining their business idea and a timescale for implementation.

Beta allows students to develop their entrepreneurial skills in a supportive environment, with one-to-one mentoring and the opportunity to receive a non-repayable grant of up to £1,500 to kick-start their business idea. The programme also offers several training sessions with experts: for example, they have a session with an intellectual property expert, a marketing expert and a financial advisor, to help refine their idea.

Beta currently runs once a year and had 20 students on the programme for the 2013–2014 academic year. A key strength of the programme is the supportive, no-strings environment it provides for students in which to experiment and take 'safe risks'. Business ideas are expected to be innovative and able to meet a market need. In the Beta programme mistakes are not seen as a setback but, rather, as part of a process for teaching students how to learn and recover from failure and setbacks.

Process detail

Figure 2 illustrates the operational processes involved in the Beta programme. The students join the programme with an initial idea; this is then developed by the student

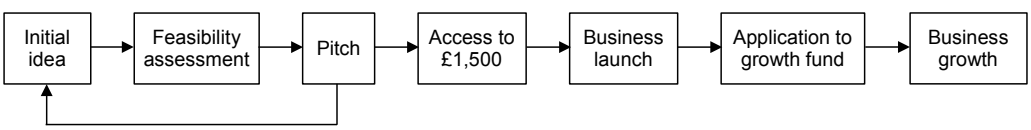

Figure 2. The Beta programme process.

with advice from a mentor, each student in the scheme being allocated a mentor (typically an Entrepreneur in Residence). When ready, the student is asked to pitch the business idea to an Advisory Panel (made up of internal and external members of the Entrepreneurship Centre), whose purpose is to evaluate the validity of the idea. If the idea is considered viable the idea is approved and the student is given access to the £1,500 funding. If the idea is not approved, recommendations are made for improvement and the student is asked to reconsider the idea. The idea can be rejected outright at this stage and the student asked to improve it or consider an alternative.

If funding is granted, the student must use the money to create a valid business entity which is then launched. Students then have an opportunity to bid for a second equity investment (up to £50,000) to facilitate further development and growth of their business. The process for this second tranche of funding involves an interview with a potential business angel or provision of access to crowdfunding.

Beta pedagogy

The programme uses a cycle of ongoing reflective learning derived from the models of experiential learning developed by Schön (1987) and Kolb (1984). The core of the learning strategy consists of encouraging the development of the business idea based on development of development, creativity and cognition (Corbett, 2005). The Beta programme encourages innovation by requiring participants to develop a viable idea which has the potential to become a growing entity. Non-growth 'lifestyle' type applications are not supported. In addition, enterprises must be seen to meet a business need rather than providing additional supply (for example, a standard service-sector business would be discouraged unless significant justification is provided). These considerations will be identified on the applicant's initial application.

Part of this process is the requirement for receiving continuous feedback from EiRs/academic staff, in a non-classroom environment, regarding the development of the idea. The learning space in this instance was an Entrepreneurial Centre with a flexible learning environment. Participants were also encouraged to share their idea and invite feedback from their peer group; the feedback promotes self-reflection and encourages the acquisition of new information, to enhance the business idea. The flexible learning space enabled both one-to-one and one-to-many tutor sessions with a focus on the facilitation of learning and knowledge exchange. Participants would meet regularly with their mentor and develop elements of the business idea. After each mentoring session, the participants were asked to consider and reflect on the session and its implications for their idea. The entire project was underpinned by the core principle of developing a personalized, creative, practical and collaborative ethos.

Findings

The key themes investigated were key drivers, motivations, programme benefits, challenges, knowledge and skill development, attitudinal impact and business support requirements.

Key drivers

The Academic Director of the Entrepreneurship Centre was asked to explain the purpose of the Beta programme. The Director responded thus:

> 'The purpose of Centre is to stimulate socio-economic growth. It is a hybrid structure of academia and business. We aim for a seamless strategy towards socio-economic growth. The Beta programme is a key enabler to closing the gap between academia and business.'

Thus the key purpose of the Beta programme was to bridge the gap between academia and business and provide an enabling system to allow students to undertake a business start-up within the university infrastructure.

Motivations

Respondents were asked to identify their motivations for undertaking the Beta programme. In descending order these were:

- To increase their chance of starting a business (67%);
- Gaining financial support (60%);
- To have individual mentoring (60%):
- To increase business knowledge (53%); and
- To increase entrepreneurial skills (53%).

It was thus apparent that the cohort was motivated to undertake the programme by the opportunities offered to boost their entrepreneurial competencies, with the added benefit of acquiring seed-corn funding. Individual mentoring support was also identified as an important driver in undertaking the programme.

Benefits

The participants were asked what they had found beneficial in the programme. In particular, responses were noted about the central role of the EiR and

provision of specific advice in intellectual property and business insurance. Representative comments were:

> 'Receiving the funding to help support our business' (Beta Participant A);
>
> 'The personalized help and support given, but also the friendliness of the staff as encouragement to proceed forwards' (BP C); and
>
> '. . . I feel that I have developed a lot of confidence in my business idea, as I came to the programme very hesitant and shy to talk about my idea' (BP H).

The provision of funding was identified as of critical importance, as were the individual support and advice provided by EIRs to build confidence and develop a viable business idea. All the respondents recognized the importance of the individual mentoring support they had been offered, which had built their confidence and self-belief. EiRs commented:

> 'Acting as a mentor to the students is extremely rewarding. I feel I benefit from their enthusiasm and they benefit from my experience' (EiR 1); and
>
> 'I fill in the gaps a little: there are things which they do not consider and my knowledge helps them to produce a more rounded business plan' (EiR 2).

Challenges

The respondents were asked to identify the challenging elements of the Beta programme. Respondents mentioned in particular their initial nervousness about going through the process of pitching their idea to a panel of Beta staff; and the need to balance the extra-curricular Beta programme with their course of study. Typical comments were as follows.

> 'I think the most challenging part of the programme has been overcoming my lack of confidence in myself and my idea, as it is pretty daunting starting up your own business. It's never really been something I have seen myself doing. But of course I'm not as scared as I was, I feel a lot more confident due to working with the EiR, as he encouraged me to see my idea from a different point of view, instead of me being critical, he allowed me to see the fun side to it again, which was great.' (BP N)
>
> 'The pitch, very nerve-racking!' (BP I)
>
> 'Working it around university and other commitments.' (BP E)

The problem of nervousness is perhaps understandable. The participant's emotional state was apparent in several comments and it was noticeable that Beta had initiated both positive and negative emotions. This was recognized by the academic team, who commented:

> 'We recognized early on that we had to strike the balance in challenging the participants to defend their idea whilst providing a supportive and friendly environment.' (Academic B)

The Beta team did provide a supportive but professional environment, to enable the participants to reflect and evaluate their idea effectively. The academic team and EiRs were known on a first-name basis by Beta participants, although the relationship remained respectful and supportive throughout. For their part, students were prepared to undertake a business start-up activity as an extra-curricular activity because they appreciated the benefits the process would provide.

Participants were also asked if any part of the Beta programme had resulted in a negative impact on setting up a business. Fourteen said that this was not the case; there was one response otherwise:

> 'When I found out my first business idea was not logistical [sic] and financially viable I lost all motivation but with a new idea I liked I was back on track.' (BP N)

This statement identifies both the positive and negative potential impacts of the Beta programme. The individual concerned found that their idea was not feasible: this is an essential purpose of the programme in that it provides a safe environment in which to evaluate an idea. In this case, the student involved was able to develop a fresh idea.

Knowledge and skill development

The participants were asked to consider how the programme had affected the development of their knowledge and skills, using a five-point Likert-style scale: Table 1 presents the full data and the following summarizes the key findings.

The students considered that the programme had helped them significantly in identifying opportunities, with 13 (87%) either agreeing or strongly agreeing with the notion. It is useful here to recall that as part of the Beta programme students were expected to undertake a feasibility analysis of a business idea and to progress with valid ideas only.

Some two-thirds of the students 'strongly agreed' or 'agreed' that the Beta programme had developed their capacity to adopt innovative approaches and enhanced

Table 1. Skills and competencies developed.

Question	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Developed your ability in identifying opportunities?	0	0	2 (13%)	6 (40%)	7 (47%)
Developed your capacity to take innovative approaches?	0	1 (7%)	4 (27%)	2 (13%)	8 (53%)
Built your resilience and ability to overcome challenges?	0	0	3 (20%)	5 (33%)	7 (47%)
Developed your ability to limit and manage risk?	0	0	3 (20%)	10 (67%)	2 (13%)
Helped you to evaluate issues and make decisions?	0	1 (7%)	3 (20%)	10 (67%)	2 (13%)
Helped build your networks?	0	1 (7%)	0	8 (53%)	6 (40%)
Allowed you time to reflect on your enterprising skills?	0	2 (13%)	1 (7%)	5 (33%)	7 (47%)
Developed opportunities for collaborative working?	3 (20%)	3 (20%)	5 (33%)	2 (13%)	2 (13%)
Helped you to develop your business idea?	0	0	0	3 (20%)	12 (80%)
Helped you to recognize financial and legal implications on a business proposal?	0	0	2 (13%)	5 (33%)	8 (53%)
Identify target markets?	0	1 (7%)	4 (27%)	5 (33%)	5 (33%)
Helped you articulate your business ideas?	0	0	1 (7%)	6 (40%)	8 (53%)
Built your confidence to start a business?	0	0	1 (7%)	4 (27%)	10 (67%)
Understand what it takes to start your own business?	0	0	1 (7%)	8 (53%)	6 (40%)

Note: sample size *N*=15; percentages have been rounded to integers

their problem-solving capabilities. The EiRs and academic staff encouraged Beta participants to seek unique and innovative solutions that would create economically sustainable business start-ups.

Participants were asked whether the programme had helped to build their resilience and ability to overcome challenges: again, the results were positive, with 12 (80%) recording 'strongly agree' or 'agreed'.

The next aspect considered was whether the programme had helped to develop their ability to limit and manage risk. The results were positive, with 10 (67%) in agreement and two (13%) strongly agreeing.

Respondents were asked to identify whether the course had helped them to evaluate issues and make decisions. The responses were positive, with 10 (67%) in agreement and two (13%) strongly agreeing. With regard to the encouragement students had received to develop networks with peers and external contacts using the Entrepreneurial Society and social media, it was apparent that the students had done so, with 14 of the 15 (93%) answering positively.

Reflection is a strong element of the Beta programme: participants are required in particular to consider the viability of their ideas: 12 (80%) agreed that there was sufficient time to reflect generally on their enterprising skills.

Responses were less favourable when students were asked whether the programme had provided opportunities for collaborative working. The majority of ideas in the first cohort were individual and so only four (26%) agreed or strongly agreed with this and six (40%) disagreed or strongly disagreed.

When they were asked if the programme had helped them to develop their business idea, 100% answered favourably, a strong endorsement for the value of the programme.

Participants were asked to indicate whether the programme had enhanced their understanding of the financial and legal implications of their business proposal. The responses were highly supportive, with 13 (86%) agreeing or strongly agreeing.

Equally, 13 (86%) thought that the programme had helped them to identify their target markets, 14 (93%) that it helped them to articulate their business ideas and 14 (93%) that it helped build their confidence. Finally, 14 (93%) agreed with the notion that the programme had enabled them to understand what it took to start a business. Overall, 93% of students answered favourably, with only one (7%) negative response, suggesting that the Beta programme was fit for purpose and enabled the participants to develop viable business ideas.

Table 2. Future career intentions.

Responses	Very unlikely	Unlikely	Undecided	Likely	Very likely
How likely are you to continue with your business after graduation?	0	0	1 (7%)	6 (40%)	8 (53%)
How likely are you to set up another business after graduation?	0	1 (7%)	7 (47%)	0	7 (47%)
How likely are you to set up a business at some stage in the future?	0	0	0	2 (13%)	13 (87%)
How likely are you to work for a small to medium-sized enterprise after graduation?	0	3 (20%)	6 (40%)	3 (20%)	3 (20%)
How likely are you to work for a large organization?	3 (20%)	3 (20%)	5 (33%)	4 (27%)	0
How likely are you to take on a postgraduate programme after graduation?	6 (40%)	4 (27%)	5 (33%)	0	0

Note: sample size *N*=15; percentages have been rounded to integers

Self-employability intentions

The respondents were asked to identify whether they required any further support for developing their business. Overall, 13 (87%) said that they did not require any further support, but two respondents felt the need for further help.

> 'Further financial and legal advice, I need more knowledge on how to set up partnerships, legal aspects.' (BP B)

> 'There will always be need for continuous support.' (BP C)

Career intentions

Perhaps the most important question in a study such as this is deals with the attitudes to an entrepreneurial career: the results for this programme are presented in Table 2. As can be seen, these responses, based on a five-point Likert-style scale, are generally favourable, with 14 of the 15 (93%) indicating that they were likely or very likely to continue with their business post-graduation, and 13 (87%) suggesting it was very likely that they would look to set up a business at some stage in the future. Equally, only four (27%) suggested that they would be likely to work for a large organization; and none of the cohort wanted to undertake postgraduate study because they were more interested in the prospect of an entrepreneurial career. These results suggest that the programme achieved its stated aim of preparing students for an entrepreneurial career.

Discussion

This study responds to the calls for further research in graduate entrepreneurship from Nabi *et al* (2006) and Holden *et al* (2007). The increase in the number of entrepreneurship education programmes has been driven by policy makers and economic necessity; however, there is a real need to confirm and exchange best practice, to facilitate business start-ups. This is the focus of this study and, we believe, its key contribution to the topic.

Overall, the Beta programme can be judged as successful in enabling students to evaluate, test and grow their nascent ideas into viable business start-ups (Albert and Gaynor, 2006). All the responses collected regarding the various measures suggest that Beta had a positive impact on attitudes and skills. Programme participants were motivated to join Beta because of the attraction of starting a business, obtaining start-up capital, accessing mentors and improving their entrepreneurial competencies.

In essence the Beta project is an amalgam of the concepts regarding pre-incubators and business competitions discussed in the literature considered above and elsewhere (Voisey *et al*, 2013). The key elements identified in Jones and Jones (2011), the provision of dedicated staff (Stephens and Onofrei, 2012), and launch capital, business mentors and specialist advice (Allen and McCluskey, 1990), are all central to the Beta programme.

The provision of seed-corn funding to graduate entrepreneurs is critical in providing a real world context and motivation for participation (Huffman and Quigley, 2002; Kirby 2006). All Beta participants welcomed this aspect and cited it as a contributory factor regarding their participation. Lack of finance has previously been cited as a key barrier to entrepreneurial activity (Fielden *et al*, 2000) and Beta overcomes this obstacle, albeit with a limited level of initial capital investment.

The Beta programme recognizes the need to build self-confidence and enterprise skills whilst allowing the participants to test and validate their business ideas. It was apparent that the project allowed students to experience both positive and negative emotions. Negative emotions (such as uncertainty, disappointment) arose when a business idea was judged not to be viable, following evaluation and reflection by the participants and mentors (Cope, 2003). On occasion, participants experienced fear and trepidation at the prospect of having to present their idea to a panel, although following the pitch all participants appreciated the experience and recognized its value in enhancing the idea and their own personal development. These negative experiences and emotions were just as important as the positive experiences because they allowed the participants the opportunity to reflect and reconsider their actions (Shepherd, 2003).

Beta also gave participants a chance to develop social and formal networks with their peers and mentors. The provision of experienced EiRs as business mentors was recognized as a central tenet in the programme's success (as noted elsewhere; see for example Greene and Saridakis, 2007; Matlay, 2008; Pickernell *et al,* 2011). The EiRs offered regular, professional advice and guidance that was used to shape the students' ideas from an early stage. EiRs were a constant presence for the participants throughout the project and developed a strong and friendly relationship, based on trust and understanding, with each student.

On completion of the programme, the objective for participants is to create a legal, fit-for-purpose entity which is ready to trade. This is a realistic and justifiable proposition. In terms of future development, the Beta programme offers the potential of an intra-university process of business start-up across and including different disciplines. An expansion in its provision throughout the university would be a logical next step in its development. In terms of future improvements, the Beta team would like to create greater engagement with external business and crowdfunding networks. There will be a need to expand the pool of mentors with relevant expertise in the various disciplines to ensure that growth across the university is successfully achieved.

Conclusions

The initial pilot of the Beta project has proved successful, with positive feedback from the participants. As noted above, the Centre recognizes the need to embed the programme throughout the university. In addition, there is also a need to integrate the second level of seed-corn funding into the scheme and to ensure that the supporting entrepreneurs understand the requirements of the both the Centre and its applicants.

In terms of best practice, the authors recommend the following main considerations.

(1) A flexible learning environment should be provided within which experiential leaning, creativity and innovation can be effectively supported.
(2) A standard classroom delivery should be avoided because it will not produce the desired outcome.
(3) Experienced mentors, ideally in the form of EiRs, should be provided; the mentors must be individuals who can support students effectively in the development of a viable business idea.
(4) Initial seed-corn funding is critical in providing a 'real world' context for participants.
(5) Participants must be encouraged to reflect, evaluate and potentially rebuild their business idea at all stages of the process.

In terms of implications for practice, programmes such as Beta offer a blueprint for entrepreneurship education in HEIs. University decision makers must understand the importance of encouraging entrepreneurial activity in undergraduate programmes and provide cross-university programmes such as Beta that enable, in particular, access to internal and external seed-corn funding.

The authors recognize that this research is limited to one university case study and the responses are drawn from a small cohort of students. Generalizing the results must therefore be treated with caution. There is a need for ongoing longitudinal research, contrasting best practice from a range of universities. In addition, the issue of positive and negative emotions created by start-up programmes also requires further examination.

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