Situated Learning in a Business Incubator: Encouraging Students to become Real Entrepreneurs

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Situated learning in a business incubator: Encouraging students to become real entrepreneurs

Authors:

Oswald Jones

University of Liverpool Management School, UK

PingPing Meckel
University of Central Lancashire, UK

David Taylor
Manchester Metropolitan University, UK

Corresponding author:

Oswald Jones, University of Liverpool Management School, Chatham Street, Liverpool L69 7ZH, UK. Email: O.Jones@liverpool.ac.uk

Abstract:

The options for conventional graduate careers have become more limited in the last twenty years. This has stimulated an increase in university programmes and modules designed to encourage students to start their own businesses. The recent global Covid-19 pandemic is likely to make the job market even more difficult for those graduating from universities in the next few years. A career as an entrepreneur is a realistic alternative to employment in the 'gig' economy for many young graduates. University-based incubators can provide a sheltered learning environment for those wishing to develop business ideas without incurring a large financial burden. In this paper, the authors draw on a range of literature (business incubation, entrepreneurial learning, human capital and communities of practice) to develop a model of a university-based incubator that will support young people in their transition to becoming real entrepreneurs.

Keywords:

entrepreneurial learning, communities of practice, incubation, university-based incubators, student enterprise

An increasingly important element of any entrepreneurial university is a strong commitment to enterprise education (Pittaway and Cope 2007; Jones *et al.,* 2019; Kariv *et al.*, 2019) and support of graduate entrepreneurship through the provision of incubation facilities (McAdam and Marlow 2008). According to Patton *et al.* (2009), the UK government introduced the Higher Education Innovation Fund (HEIF) to promote the knowledge economy by building better links between universities and business. The authors go on to state:

> 'The HEIF fund has been made available to universities to develop their potential as drivers of future economic growth and the monies have been used by universities to finance, among other things, their business liaison and technology transfer offices, and to support spinouts and other business ventures often through the introduction of incubation facilities.' (Patton *et al.,* 2009: 622)

Analysis by the Department of Business, Energy and Industrial Strategy indicates that, currently, there are over 130 incubators and accelerators operated by UK universities.[1] At the same time as the development of university-based incubators (UBIs), there was a concomitant increase in entrepreneurship courses aimed at undergraduate and postgraduate students (Herrmann *et al.,* 2008). Pittaway and Cope (2007) suggest a number of topics in enterprise education that have received a considerable amount of academic attention, such as student orientation to entrepreneurship and the most appropriate teaching approaches. At the same time, there are gaps related to the impact of enterprise education students who do start their own businesses (Pittaway and Cope, 2007). Gibb (2011), a long-term champion of enterprise education, stressed the need to reject traditional learning modes in favour of immersing students in entrepreneurial activities (Gibb, 1997). Lourenco and Jones (2006) describe the importance of an approach to enterprise education based on active learning techniques such as role-play, fieldtrips and scenario planning alongside conventional classroom pedagogy (Kariv *et al.,* 2019; Matlay, 2005; 2006; 2009; Sörensson and Bogren, 2020).

[1] https://www.gov.uk/government/publications/business-incubators-and-accelerators-the-national-picture (accessed September, 2020).

Most recent UK graduates engaged in business start-up have several disadvantages, including substantial financial liabilities associated with their studies. For example, those who graduated from English universities in 2020 will have average loan debts of more than £40,000[2] compared to £24,960 in Wales, £23,520 in Northern Ireland and £13,890 in Scotland.[3] Networks of undergraduate students are generally concentrated on family and friends; they lack credibility with resource providers and have limited business experience (Edelman *et al.,* 2016; Klyver, 2007; Manolova *et al.,* 2019). Battisti and McAdam (2012) confirm that family and friends are the most important resource-providers for graduate entrepreneurs in UBIs (Eveleens *et al*., 2017). Also, as pointed out by Jones *et al*. (2019: 186), 'the literature suggests that university graduates are poorly equipped for future business activity (Pittaway and Cope, 2007; Premand *et al.,* 2016)'. Therefore, university-based incubators are important for recent graduates because they provide a supportive environment in which inexperienced incubatees can improve their entrepreneurial skills while developing feasible business ideas (Voisey *et al.,* 2013).

Incubation provides an ideal opportunity for learning-by-doing, as well as social learning through engaging with others who are involved in the start-up process (Taylor and Thorpe, 2004). Becoming part of a 'community of practice' (Lave and Wenger 1991) helps nascent entrepreneurs acquire new knowledge as they engage in active learning (Refai and Klapper, 2016). Incubation provides access to key knowledge brokers, such as the incubation manager who can link young and inexperienced entrepreneurs to those with greater experience, as well as potential resource providers in the form of larger companies, business angels and, eventually, venture capitalists (McAdam *et al.,* 2016; Van Weele *et al*., 2018).

[2] https://researchbriefings.files.parliament.uk/documents/SN01079/SN01079.pdf (accessed December 2020).

[3] https://www.statista.com/statistics/376423/uk-student-loan-debt/ (accessed December 2020).

Our objective in this paper is to examine a wide range of literature covering business incubation, entrepreneurial learning, prior knowledge, human capital and communities of practice to develop a model of a UBI.

Research Approach

In an editorial for the *International Journal of Management Reviews (IJMR)*, Jones and Gatrell (2014) discuss the increasing prevalence of 'systematic' literature reviews. The authors build on work by Rousseau *et al*. (2008), who distinguish between traditional narrative literature reviews and systematic research syntheses. Most literature reviews published in leading journals such as *IJMR* are now based on the systematic approach as described by Tranfield *et al.* (2003) because editors (and reviewers) demand high levels of transparency, rigour and objectivity (Denyer and Transfield, 2009). As we explain below, our review of the literature was based on a mixture of the traditional and systematic approaches.

The genesis of this paper was a PhD focusing on entrepreneurial learning in a UBI (Meckel, 2014). As with most doctoral students, Meckel adopted an approach known as the 'traditional narrative review', which uses informal mechanisms for organizing and analysing the literature (Hammersley 2001). In developing this paper, we began by examining literature related to five core concepts identified by Meckel (2014): UBIs, entrepreneurial learning, communities of practice, prior knowledge and human capital. The original material was then extended by searching the literature[4] systematically without adopting all the principles of a systematic literature review (Tranfield *et al.,* 2003). Initially, we searched the EBSCO Business Source Premier database for work published in refereed journals using each of the five concepts mentioned above. Based on titles and keywords, we read the abstracts to establish the extent to

[4] Between March and December 2020.

which each paper linked to our core themes of learning in UBIs. We also scanned the bibliographies of the most recent papers to identify publications that had not been found in our original searches. As Jones and Gatrell (2014: 257) point out, 'there will always be a place for narrative reviews as long as authors are able to demonstrate a real contribution to knowledge'. Our contribution to knowledge is to bring together a range of concepts from the literature to develop a realistic model of a student entrepreneur learning community of practice (Figure 1).

Figure 1 about here

University-based incubation

There is an extensive literature dealing with the performance of business incubators (Albort-Morant and Ribeiro-Soriano, 2016; Bergek and Norrman, 2008; Blok *et al.,* 2017; Bone *et al.,* 2017; 2019; Buckley and Davis, 2018; Lukeš *et al,* 2019; Mian *et al.,* 2016; Sedita *et al*, 2019). Hackett and Dilts (2004) claim that the first business incubator was established in the USA in 1959. Publication of Temali and Campbell's (1984) study stimulated interest from the academic community. According to Theodorakopoulos *et al.* (2014: 606) there have been three generations of business incubation. The first generation (1980–1990) concentrated on affordable space and shared facilities; the second (1991–2000) added various support services including business advice and networking; and the third (2001 onwards) introduced mentoring/coaching, business acceleration and network development to the first- and second-generation provisions. In one of the earliest studies, Brooks (1986) suggested that successful incubators needed to have a close, formalised relationship with universities. Allen and McCluskey (1990) identified four distinct types of incubator: for-profit property development, non-profit development corporation incubators, academic incubators and for-profit seed capital incubators. More recently, Ng *et al.* (2019) argued that, in many cases, incubators had a range of objectives and they identified a new category described as a 'hybrid incubator'. In a

comprehensive review of the literature, Mian *et al.* (2016) claimed that research on business incubation had intensified since the beginning of the 21st century. Therefore, in this review we intend to concentrate on literature focusing specifically on UBIs. We believe that this emphasis is necessary because UBIs are likely to differ substantially from conventional for-profit incubators.

UBIs provide tenants with two main services: first, office space, business support and training; second, access to new technologies and credibility with various stakeholders (Redondo and Camerero, 2019a). The authors distinguish between three elements of the incubation process: pre-incubation (business planning and training), incubation (coaching/mentoring, advanced business planning and commercialisation) and post-incubation (internationalisation support, business development etc). According to Nabi and Holden (2008), graduate entrepreneurs are university students who pursue venture creation or self-employment as a career path pre- or post-graduation (see Battisti and McAdam, 2012). A number of writers propose that university technology business incubators (UTBIs) are critical support mechanisms for encouraging the growth and development of early-stage high-technology firms (Fang *et al,* 2010; McAdam and McAdam, 2008; Nicholls-Nixon and Valliere, 2020; Wonglimpiyarat, 2016). In contrast, Patton and Marlow (2011) claim that there is no academic consensus on the contribution incubators make to the performance of new ventures (Aernoudt, 2004; NESTA, 2008).

Based on a sample of US universities, Lasrado *et al*. (2016) contacted over 600 graduated firms and created a matched sample of firms from non-university incubators. They established that there was a greater rate of increase in jobs and sales over time for university incubated firms than non-university incubated firms (*cf* Ensley and Hmieleski, 2005). The main benefits of belonging to a UBI included greater connectivity to their community of stakeholders and more legitimacy with larger businesses (Lasrado *et al.,* 2016: 217). In their

study of a Welsh University 'pre-incubator', Voisey *et al.* (2013) selected 26 businesses that had graduated between 2001 and 2011. The results confirmed that pre-incubation facilities provided would-be entrepreneurs with the support to test new ideas while developing their business skills (Voisey *et al.,* 2013). Significantly, the authors emphasise the key role played by UBIs in times of economic recession and high graduate unemployment. In an earlier study, Voisey *et al.* (2006) also found that UBIs improved business skills, interpersonal skills and enhanced peer-to-peer networking (Cooper *et al.,* 2012; Culkin, 2014; Jones *et al.,* 2014).

Nahapiet and Ghoshal's (1998) three dimensions of social capital (structural, relational and cognitive) were used to analyse the activities of graduate entrepreneurs in a UBI (Battisti and McAdam, 2012). The study compared two graduate entrepreneurs and two experienced academic entrepreneurs based in an Austrian Science Incubator. The graduate entrepreneurs continued to rely on their strong ties (Granovetter, 1973), comprising family and friends, throughout the two years of the study. In contrast, the academic entrepreneurs were able to mobilise a more heterogeneous network of relationships (Battisti and McAdam, 2012). Reliance on strong ties meant that the younger entrepreneurs were less equipped to access a wider range of resources (Lee and Jones, 2008). Interviews with 25 graduate entrepreneurs and analysis of their business plans revealed four types of relational capital during new venture formation: development of networks, relationship building, accessing and leveraging knowledge experts and members of associations (Gately and Cunningham, 2014). While McAdam and Marlow (2007) confirmed the benefits of UBIs for young entrepreneurs they also identified risks for those whose business ideas were based on proprietary scientific knowledge. Confidentiality was an increasingly issue as business ideas matured and entrepreneurs did not want to be based near to similar businesses (McAdam and Marlow, 2007).

Soetanto and Jack (2016) examined the long-term impact of UBIs on growing firms in the UK, the Netherlands and Norway. Strong network ties (academic staff and business) had a

positive impact on the performance of spin-offs. Díez-Vial and Montoro-Sánchez (2016) examined the relationship between knowledge exchange and innovation amongst firms based on Madrid Science Park (linked to the Autonomous University of Madrid). Those firms centrally located within their knowledge networks also had higher levels of innovation (Díez-Vial and Montoro-Sánchez, 2016; Ng *et al.,* 2019). In their study, McAdam *et al.* (2016) established that effective UBIs were embedded in regional ecosystems bringing together industrial partners, R&D laboratories, banks and investors such as business angels (Etzkowitz, 1998; 2003; Carayannis and Rakhmatullin, 2014).

Having introduced the topic of university-based incubation, in the next section we examine the crucial role played by incubator managers or management teams in creating the appropriate conditions for a learning community of practice to emerge amongst incubatees.

Managing UBIs

It is widely acknowledged that the incubation manager (IM) is central to the success of business incubators (Culkin, 2014; Kakabadse *et al.,* 2020; Mian, 2014; Patton and Marlow, 2011; Theodorakopoulos *et al.,* 2014). Nevertheless, IMs must work within the existing 'institutional logics' if they are to provide an integrated service to their tenants (Redondo and Camerero, 2017). IMs should adopt a brokerage role by building links with potential customers, funders and more experienced business people. Managers responsible for eight UBIs in Portugal were interviewed by Carvalho and Galina (2015). Their findings indicated that the management teams' ability to offer softer services such as networking and business skills were more important to the start-up and growth of entrepreneurial firms than harder factors such as the incubator infrastructure (Carvalho and Galina, 2015: 264). At the same time, incubatees must

be willing to develop a working relationship with the IM if they are to make a success of their time in the UBI (Ahmad and Ingle, 2011).

Ahmad and Thornberry (2018) examined the roles of management teams in two very different incubators based in Dublin. The management team of IncWorks (a university-based high-tech incubator) had detailed targets related to the number of spinouts, the number of new clients, the number of feasibility grants and the amount of seed funding/capital obtained by their clients. It was not clear, however, whether underperformance was sanctioned and the authors conclude that the 'IM's true role remained largely uncontrolled and unmonitored' (Ahmad and Thornberry, 2018: 1203). In contrast, in DubInc (a Community Enterprise Centre) there was a clear separation between the manager's formal role of achieving monthly revenue targets and their informal role as coach and mentor. The *DubInc* IM was also expected to maintain good relations with the local community to support the creation of a strong enterprise culture.

Redondo and Camarero (2019a) draw on their extensive study of incubators based in the Netherlands and Spain to argue that those with experience of both business and science are best suited to running university incubators. Incubators offering the widest range of services had the highest occupancy rates and the highest number of firms successfully graduating to the next stage. Using incubatee data from the same study of incubators in Spain and the Netherlands, Redondo and Camarero (2019b) examine the IM's role in developing social capital in UBIs. The results indicated that the creation of relational social capital, based on trust and reciprocity, between incubatees depended on the IMs taking an active role. Those IMs who adopted a 'brokerage role' were responsible for establishing bridging social capital, which enabled incubatees to build external business networks (see Culkin, 2014). Bridging social capital is particularly important because it 'has a significant influence on the efficiency of

incubatees' business in terms of business planning, implementation and management' (Redondo and Camarero, 2019b: 619).

In their recent study, Kakabadse *et al*. (2020) examine the role and performance of IMs based on 40 interviews in incubation centres across the UK. Confirming the findings of Redondo and Camarero (2019b), they found that IMs had an important role in terms of creating bridging and bonding social capital. According to Kakabadse *et al.* (2020), IMs saw their primary function as acting as mentor to incubatees and being a catalyst for new business ideas. The IMs acknowledged the need to meet institutional targets for occupancy and graduation rates while stressing the need for flexibility in their jobs so that they could also focus on innovation and job creation. Lack of funding, resources, time and too much 'red-tape' were the main constraints on IMs' ability to meet their targets (Kakabadse *et al.,* 2020: 490). In terms of balancing their responsibilities to the institution and to incubatees, IMs' roles were concentrated on prioritising, delegating, managing expectations and maintaining a working relationship with incubatees. In general, IMs felt that too much focus on targets prevented them from achieving their main goal of providing incubatee support. Hence, IMs should ensure that performance indicators and compliance requirements align with incubatees' support needs (Kakabadse *et al.,* 2020: 11).

Other scholars confirm that those IMs who provide business support and access to networks are likely to have lower failure rates amongst incubatees (Bergek and Norrman, 2008). Nair and Blomquist (2019) carried out 56 in-depth interviews with IMs/business coaches and entrepreneurs in nine Swedish incubators (including three UBIs). They claim that IMs should concentrate on selecting the best team rather than on the business idea in the early stages of incubation. Encouraging stakeholder involvement is essential as teams seek validation of their business models. This stage is followed by development of the business model and a search for funding and professional or technical expertise (Nair and Bomquist, 2019). As

businesses exit the incubator, then the focus of the management team switches to building a scalable business model (DeSantola and Gulati, 2015). Galvão *et al.* (2019) also focus on networks in their study of entrepreneurs based in Portuguese incubators. IMs provided formal links to external institutions, which supplemented the entrepreneurs' informal social networks. These more strategic networks, initiated by IMs, enabled entrepreneurs to access to external funding and knowledge as well as gaining experience of negotiating with weak ties (Galvão *et al.,* 2019; Sullivan *et al.,* 2020).

Having established the role of incubation managers in the operation of UBIs, we turn our attention to incubatees during their tenancy in an incubator. The importance of experiential learning in the creation of a community of practice during the incubation process is widely acknowledged in the literature.

Entrepreneurs and Learning Communities

Lamont (1972) was one of the first authors to recognise the importance of entrepreneurial learning, and in the last 20 years 'learning' has become a central feature of entrepreneurship research (Hyams-Ssekasi and Caldwell, 2018; Toutain *et al.,* 2017). The seminal work of Jason Cope certainly contributed to a rapid growth in research on the role of experiential learning in enhancing entrepreneurship skills (Cope 2003; 2005; 2011; Cope *et al.,* 2007; Pittaway and Thorpe, 2012). Cope and Watts's (2000) paper is certainly seminal in the academic literature dealing with entrepreneurial learning (to date[5] it has attracted more than 1250 Google Scholar citations). Experiential learning theory provides a useful framework for studying entrepreneurship in the context of a business incubator (Corbett, 2005). First, opportunity identification and development occur when prior knowledge provides the basis for the creation

[5] December 2020

of new knowledge (in this context, an idea) by engaging in the development process (Smith *et al.,* 2019). Second, both prior knowledge and newly acquired information, where knowledge (or business ideas) is created and re-created, can lead to the identification and development of opportunities (Schmitt *et al.,* 2018). The framework developed by Smith *et al.* (2019) connects the person with the opportunity (knowledge, information and experience of transformation) and emphasises the interplay between the three concepts. Experiential learning theory (ELT) also stresses the importance of the *process* of transformation, rather than content or outcomes (Pittaway and Cope, 2007).

Refai and Klapper (2016: 487) draw on Fayolle's (2013) work (what, how and where) adding four 'aspects of experiential learning for enterprise education' (AELEE) to extend the Kolb learning cycle. These four elements – tactics, learning environment, role behaviour and the institutional context – shape the nature of experiential learning. 'Tactics' refers to the ways lecturers engage students by introducing, for example, case studies or experienced entrepreneurs. The 'learning environment' concerns 'spaces' where instruction takes place, such as conventional classrooms or laboratories/workshops, which encourage more active forms of learning. 'Role behaviour' focuses on the approach adopted by lecturers, which may vary from traditional pedagogy to a more facilitative role designed to encourage learner engagement. Finally, the 'institutional context' draws attention to the department (Business School), the university and the regional ecosystem in which learning takes place (Refai and Klapper, 2016: 496). The last aspect is of direct relevance to the ways in which inexperienced entrepreneurs engage with the incubator learning process discussed below.

Situated learning theory indicates that learning takes place in communities of practice amongst groups of people engaged in a common enterprise (Theodorakopoulos *et al.,* 2014). The 'community of practice' approach is based on three key elements: a domain of knowledge, a community and its shared practices (Wenger, 2000; 2009). Situated learning, which occurs

both formally and informally, stresses the importance of legitimate peripheral participation (Lave and Wenger, 1991). This is the processes by which newcomers are able to join and engage in an established learning community such as a UBI. Thus, the primary sensemaking distinction concerns whether research is focused on developing individual knowledge and skills or recognition that learning is influenced by the context of experiences, problem-solving and networks in which nascent entrepreneurs are embedded (see Berends *et al.,* 2016). Developed from the theory of situated learning (Lave and Wenger 1991), Wenger (1998) sees learning as social participation and identifies four elements of learning: identity (learning as becoming), meaning (learning as experience), practice (learning as doing) and community (learning as belonging). These elements suggest that individuals learn not only from self-critical reflection but also by interacting with their environments through relationships in the community (Klapper and Refai, 2015; Lans *et al.,* 2008).

Kolb and Kolb (2005) developed the concept of learning space and highlight its importance in enhancing experiential learning. They draw the social concept of learning from the ecology of human development (Bronfrenbrenner 1979; 1977), situated learning theory (Lave and Wenger 1991) and the theory of knowledge creation (Nonaka and Konno 1998). Kolb and Kolb (2005) suggest that individuals can adapt their styles of learning to different contexts. When nascent entrepreneurs interact with a dynamic environment, they need to transform from individuals with business ideas into entrepreneurs with viable ventures. The concept of *Ba* (Nonaka and Konno, 1998; Nonaka and Toyama, 2015) is combined with the idea of an 'enabling context' (Rennemo and Åsvoll, 2019:3) to stress ways in which dialogue between entrepreneurs creates new knowledge. Rennemo and Åsvoll (2019) go on to argue that trust between members of the community and 'professional faciltation' are central to the promotion of meaninful dialogues.

Several commentators maintain that entrepreneurship and learning do not take place in isolation; rather, they are part of a social process and all knowledge is socially constructed (Cope 2005; Cope and Watts 2000; Pittaway and Cope 2007; Rae and Carswell 2001; Rae 2005; 2015; Theodorakopoulos *et al.,* 2014; Wenger 1998). Using a narrative approach, Rae (2005) develops a conceptual model of entrepreneurial learning which consists of three main components and eleven subcomponents. Personal and social emergence, negotiated enterprise and contextual learning are the three main components. According to Pittaway and Cope (2007: 213), entrepreneurs can be described as 'practitioners who operate in social communities of practice'. This view is based on the idea that entrepreneurs take a proactive role in identifying, developing and exploiting opportunities through self-reflections as well as social interaction. Kolb and colleagues (Baker *et al.,* 2005) also extend experiential learning theory by suggesting that conversations help groups of learners construct new meaning and transform their collective experiences into knowledge and knowing. More recently, Politis *et al.* (2019) have confirmed the links between experiential learning and collective learning based on a study of entrepreneurs in a venture accelerator programme.

In understanding the nature of learning in a UBI, it is important to recognise the significance of both human capital and prior knowledge. Human capital is generally measured by an individual's formal educational achievements. While prior knowledge can be linked to qualifications, it can also be acquired informally through observation of potential gaps in the market or inadequate services provided by existing organisations.

Prior Knowledge and Human Capital

Those entering a UBI will come from a range of different educational backgrounds. No doubt some will have taken degrees or modules related to entrepreneurship and business start-up,

while others may have been stimulated to start their own business by a family background in business ownership (Jones and Giordano, 2020) or by the desire to pursue a personal interest (Ardichvili *et al.,* 2003). Effectuation theory stresses the importance of nascent entrepreneurs making the best possible use of the resources at their disposal (Read *et al.,* 2016; Sarasvathy, 2001; 2012). In the case of students thinking about starting a new business, such resources are likely to be extremely limited. Hence, it is important that they develop the knowledge to identify and evaluate those resources in which to invest (Sullivan *et al.,* 2020). As pointed out by Rae and Carswell (2001), tacit knowledge is important for nascent entrepreneurs who want to create a distinctive business model. Initially, internal knowledge resides largely with the individual entrepreneur and is central to opportunity creation. As the business develops, externally sourced knowledge in the form of partnerships with key stakeholders is important for enhancing the firm's resource capabilities (Jenssen and Koenig 2002). The knowledge resources necessary for entrepreneurs include an understanding of the processes involved in business creation, people management, business growth, new technologies and new product development (Brush *et al.* 2001). Successful pursuit of these activities depends on an entrepreneur's understanding of the type and configuration of resources necessary to develop a particular opportunity. Wiklund and Shepherd (2003) identified three types of procedural knowledge important to new venture founders: knowledge about the industry, knowledge about the type of business, and knowledge about starting-up new ventures. A wealth of experience-based knowledge, developed over time, exerts a central and often pivotal influence on the entrepreneur's ability to engage effectively in opportunity recognition and the exploitation of new ideas (Hansen *et al.*, 2011).

For most students with limited exposure to the business world, personal interests will be related to knowledge acquired through part-time work, family relationships and daily life (Venkataraman 1997). Pre-existing networks consisting of family members, close friends and

associates are essential for young entrepreneurs as well as the ability to bridge into new networks (Lee and Jones, 2008). In their study of high-tech start-ups, Sullivan *et al.* (2020) established that weak ties were extremely important for learning about customer requirements. Clearly, the size and density of existing social networks (Elfring and Hulsink 2003; 2008) must be combined with the skills to create resource opportunities by extending their networks (Lee and Jones 2008). George *et al.* (2016: 332) point out that literature related to prior knowledge is 'heterogeneous' and summarise their findings in the following manner: 'Research is oriented mostly toward finding appropriate contingencies in which prior knowledge can be an influencing factor for recognizing opportunities.' Early work applied human capital theory to discuss the impact of prior knowledge on opportunity recognition (Ardichvili *et al.,* 2003). That work was followed by studies concerned with specific dimensions of prior knowledge arising from the knowledge-based perspective (Hill and Birkinshaw, 2010; Marvel and Droege, 2010). Others have applied learning theories to examine how teaching curricula enhance opportunity recognition (Kourilsky and Esfandiari 1997) and how learning asymmetries influence opportunity recognition (Corbett 2007).

Drawing on '25 start-up stories' collected by the Kauffman Foundation, Smith *et al.* (2019) carried out qualitative comparative analysis (QCA) to identify links between prior knowledge and opportunity discovery/creation (Tocher *et al.,* 2015). Nine entrepreneurs used a 'creation approach' and all benefited from a committed circle of friends and family to provide knowledge and information related to the opportunity. Social capital (Jack, 2005; Taylor *et al.,* 2004) was also important to the sixteen entrepreneurs who adopted a discovery approach for the identification of new opportunities (Shane, 2000; 2003). However, the key difference was that the 'discovery' entrepreneurs made much greater use of 'social bridges' to access a wider range of knowledge and information. As summarised by the authors: 'Specifically, results suggest that entrepreneurs may rely on social capital and prior knowledge and experiences in

different ways, depending on the type of opportunity associated with their venture.' (Smith *et al.,* 2019: 90) Based on their study of Irish business incubators, Buckley and Davis (2018) stress the importance of individuals and/or teams having the appropriate levels of 'absorptive capacity' to make the best use of incubator services,

A study of businesses established by young entrepreneurs notes that 73% of the participants had developed informal ventures while still at school (Hickie, 2011). Jones and Giordano (2020) provide an example in their discussion of a fast-growing business that originated as a schoolboy 'hobby' based on eBay trading. Vicarious learning (Yeadon-Lee, 2018) through observing organizational activities in cafes, restaurants and retail outlets as well as on TV programmes such as *Dragon's Den* or *The Apprentice*) are ways of compensating for a lack of for real-world experiences. However, the majority of young entrepreneurs in Hickie's (2011) study gained work experience before starting their businesses. Most were involved with the kind of mundane retail activities familiar to students in schools, colleges or universities (working in fast-food restaurants, for example). Nevertheless, this experience provided insights into important elements of entrepreneurship such as understanding customers, working in teams and relationships with suppliers. In more formal terms, these experiences made a significant contribution to the development of their human capital (Seet *et al.,* 2018). Based on the analysis of extensive secondary data, Jayawarna *et al.* (2014) found that human capital in childhood, adolescence and early adulthood was an important predictor of the likelihood that individuals would pursue a career in entrepreneurship. Students demonstrating strong analytical abilities and high-level cognitive/creative abilities were strongly associated with a predisposition to start their own business. The authors summarise their findings by stating that a supportive family and a solid background in education provides a strong initial pathway to entrepreneurship (Jayawarna *et al.,* 2014).

Finally, we examine key contributions to literature associated with communities of practice. There is increasing recognition that creating a learning community of practice is central to establishing effective UBIs.

Creating Communities of Practice

According to Lave and Wenger (1991), situated learning bridges the cognitive learning processes and those social practices associated with the 'lived-in world'. Therefore, learning through what they describe as legitimate peripheral participation (LPP) draws attention to the situated practices through which communities of practice (CoP) cooperate. Individuals develop their identities and practices through participation in situated learning activities (Handley *et al.,* 2006; Lave and Wenger, 1991; McDonald and Cater-Steel, 2017; Mercieca, 2017). Handley *et al.* (2007) claim that, originally, situated learning in communities of practice was associated with relatively small groups of skilled learners (tailors and midwives). Hence, developing learning communities in a UBI is commensurate with Lave and Wenger's (1991) original conceptualisation of CoPs based on relatively small groups of learners. Wenger (1998) argues that CoPs are defined by three key elements (see Van Weele *et al.,* 2018: 175): first, a common understanding of the shared goals and interests associated with a community of practice (supporting students in developing feasible business ideas, for example); second, the shared norms, values and identities that contribute to a sense of belongingness; and third, a shared repertoire associated with those mutual resources and capabilities, which are recursively reproduced by the community's social practices. Successfully creating a community of entrepreneurs based in a UBI is based on three factors: i) community strength, ii) the quality of boundaries (opportunities to interface with other CoPs) and iii) a community identity which is focused on learning and development (Theodorakopoulos *et al.,* 2014: 611). While Kasperova

et al. (2018) agree that entrepreneurial identities are shaped by social relations, they suggest that it is also important to consider the ways 'cultural artefacts' (building, information technologies, etc) shape the motivation of incubatees.

In any learning community, most knowledge is tacit and must be acquired directly through regular social interaction (Nonaka and Takeuchi, 1998). Such interaction also means that high levels of mutual trust are established in a CoP, enabling participants to share problems, knowledge, information and practices (Brown and Duguid, 1991; 2001). However, one of the main barriers to creating CoPs in UBIs is the issue of confidentiality associated with science or technology based businesses. Confidentiality has been an issue for many entrepreneurs located in science-based university incubators (McAdam and Marlow, 2007). In their study of Australian start-up businesses, Van Weele *et al.* (2018) found that entrepreneurs did regard themselves as belonging to a community of practice in which knowledge-sharing was the norm. Entrepreneurs operating in shared workspaces certainly engaged in shared practices, but even those in regionally distributed ecosystems created networks of practice (Nicholls-Nixon *et al*., 2020; Van Weele *et al.,* 2018).

Start-up accelerators (and incubators) should combine the three components of entrepreneurial learning labelled 'know-what', 'know-how' and 'know-who' (Seet *et al*., 2018). In one study, many of the respondents (incubatees based in an Australian accelerator) focused on the 'know-who' of the programme – 'the people aspect of their learning experience' (Seet *et al.,* 2018: 246). This cooperative environment contrasted with the sense of isolation incubatees felt before joining the accelerator. *Mentors* delivered the most valuable learning based on their own 'real-world' experiences; *experts* in law, marketing, production and search engine optimisation were also useful; *peers* provided the opportunity for collaborative learning (Lévesque *et al.,* 2009), which encouraged motivation and self-confidence improving the chances of success; *customers/stakeholders* provided practical knowledge related to the

nascent entrepreneurs' specific business problems (Seet *et al.,* 2018: 247–248). A study by Politis *et al.* (2019) demonstrates that learning in an accelerator is 'triggered' by three catalysts: affective motivation, constructive feedback and peer atmosphere (see Hackett and Dilts, 2008). Incubation managers can provide links between incubatees who need advice or information and individuals or organizations that can provide the necessary support (Wenger 2000; 2009; Garavan *et al.,* 2007). Brokers may also establish links between various CoPs by introducing members or practices from one community to another (Wenger *et al.,* 2002). The study carried out by Van Weele *et al*. (2018) confirms the importance of IMs adopting roles as facilitators to introduce newcomers to the incubator (CoP) and as brokers to build links with external knowledge and resource providers.

In the following section, we draw together the main elements from the literature to develop a model of university-based incubation. It is important to note that we do not see the incubator as science or technology based, but as open to a wide range of businesses and business ideas.

Towards a Community of Practice: Situated Student Learning

Drawing on the literature reviewed above, we suggest the model depicted in Figure 1, which outlines the key elements of an incubator-based community of practice. The principle underlying our model is that students will have varied educational experiences, including those without backgrounds in business/management, and nor will they all have studied the physical sciences. Thus, the type of incubator we are advocating will not be science or technology based. As McAdam and Marlow (2007) established, confidentiality can be an issue for entrepreneurs developing ideas based on proprietary intellectual property. We propose that greater diversity

will encourage knowledge-sharing amongst incubatees and help to build a thriving community of practice (Farnsworth *et al.,* 2016; Nicholls-Nixon *et al*., 2020; Van Weele *et al.,* 2018).

Figure 1 about here

Ideally, UBIs will not only provide a physical space but will also act as a social space in which students, the management team, business advisers/mentors and external speakers can meet informally. These social spaces should function as a basis for networking activities and provide a safe environment for students to discuss their ideas while working towards a common goal of establishing their businesses. As pointed out by Tocher *et al.* (2015), 'social resources' are fundamental to effective businesses opportunity development and exploitation (see Morris *et al.,* 2013). Those responsible for supporting students attempting to start new businesses have a key role in ensuring that they can develop their bridging and bonding social capital (Lee, 2017; Lee and Jones, 2008; Redondo and Camarero, 2019b). The centre of the model (Figure 1) focuses on the learning processes which help incubatees identify and develop ideas into feasible business propositions (Jones and Giordano, 2020). At the same time, belonging to a community of practice will help develop their entrepreneurial identities as they make the transition from student to entrepreneur (Klapper and Refai, 2015). Not all those entering a UBI will go on to start their own successful businesses. We do, however, suggest that the learning experience in a UBI can equip recent graduates with an enterprising mindset that will help them whatever career they pursue in the future.

The concurrent processes of developing a business idea (Ardichvili *et al,* 2003), entrepreneurial identity (Kasperova *et al.,* 2018) and CoP membership (Handley *et al*., 2006; 2007) are shaped by the knowledge and experience, skills and resources (human capital) that incubatees gain during their time in education. As discussed above, those with some work

experience (Hickie, 2011) while in school, college or university will be best placed to take advantage of the opportunities offered by being based in an incubator. Well-developed social skills are certainly important in terms of young entrepreneurs extending their close network ties as a means of accessing additional resources (Tocher *et al*., 2015). Resources possessed by those entering a UBI are more likely to be intangible than tangible. Most students will have incurred substantial debts during their studies and therefore will lack access to financial capital. Adopting an effectual approach to start-up by bootstrapping (Jayawarna *et al.,* 2020; Jones and Jayawarna, 2010) additional resources will ensure that young entrepreneurs can start their businesses without incurring an additional financial burden. As pointed out by Battisti and McAdam (2012), family and friends are the most important resource providers for graduates at the start-up stage. These arguments are further supported by an earlier study that identified the importance of networking in a university incubator (McAdam and McAdam, 2006). Based on social capital theory, Bøllingtoft and Ulhøi (2005) confirm the need for incubatees to build extensive internal networks as a means of enhancing their learning. In addition to bonding (internal) social capital, an effective community of practice encourages external network links and the creation of bridging (external) social capital (Redondo and Camarero, 2019b).

Many recent studies identify the central role of the manager and management team as key to successful business incubation (Galvão *et al.,* 2019; Mian, 2014; Nair and Bloquist, 2019; Redondo and Camerero, 2017; Theodorakopouou *et al*., 2014). However, most existing studies focus on science/technology-based incubators rather than incubators that support a range of businesses (Battisti and McAdam, 2012; Diez-Vial and Montoro-Sanchez, 2016; Huynh *et al.,* 2017; Mascarenhas *et al.,* 2019; Patton and Marlow, 2011; Redondo and Camarero, 2019a; Wann *et al.,* 2017). Nevertheless, scholars are clear that the IM or management team are key in ensuring that incubatees benefit from their tenancy (Kakabadse *et al.,* 2020). Key studies confirm that the IM is essential for creating relational social capital

based on trust and reciprocity amongst incubatees (Carvalho and Galina, 2015; Redondo and Camarero, 2019b). Previous experience in business, or as an entrepreneur, is also regarded as highly desirable for successful incubator managers (Breznitz and Zhang, 2019). Such experiences ensure that IMs are effective in adopting a 'brokerage' role linking incubatees to external business networks (Redondo and Camerero, 2019b). The manager's role in providing access to potential customers, funders, experienced entrepreneurs and business owners was also identified as crucial to the development of businesses in a Dublin-based UBI (Ahmad and Ingle, 2011). Other work focuses on the distinction between the manager's formal role associated with meeting targets by monitoring and measuring and informal activities associated with coaching and mentoring (Ahmad, 2014; Ahmad and Thornberry, 2018). In their recent study, Kakabadse *et al.* (2020) suggest that incubation managers are primarily focused on supporting incubatees by mentoring during the difficult start-up period. The more formal requirements associated with meeting targets for income generation and graduation rates were regarded as 'red tape' which limited their ability to provide real support for incubatees (Kakabadse *et al.,* 2020). Therefore, the importance of learning within any UBI will be shaped by the manager or management team (Figure 1).

Most UK universities now have entrepreneurial clubs and societies which promote the importance of entrepreneurship to their students. An exploratory study based on previous research undertaken to better understand entrepreneurial learning identifies the key role played by clubs and societies in enhancing the skills of students (Pittaway *et al.,* 2011; 2015). As the authors go on to point out, club membership is an important factor in developing the social skills necessary for students to become successful entrepreneurs. Therefore, we suggest that it is essential that campus-based clubs and societies associated with entrepreneurship are encouraged to have a role in UBIs.

Jones and Macpherson (2014) point out that entrepreneurial research has become increasingly accepted in recent years, with many publications appearing in top-rated business and management journals. Those involved with research on entrepreneurship and small businesses are often involved in projects designed to support new and existing small businesses. Lancaster University's LEAD (Leadership and Enterprise Development) initiative has been widely adopted by other business and management schools to enhance the leadership skills of small business owners (Barnes *et al*., 2015; Gordon *et al.,* 2011; Kempster and Smith, 2015; Smith and Robinson, 2007). The programme is also important for confirming the 'impact' of entrepreneurship research with leading UK schools such as Lancaster, Liverpool, Leeds and Manchester Metropolitan submitting cases to the 2014 Research Excellence Framework (REF)[6] exercise. Hence, we suggest that the entrepreneurship research community is distinctive in its desire to make a practical difference as well as contributing academically by publishing in top-rated journals.

McAdam *et al.* (2016) examined business incubation in two quite different UK universities. One belonged to the Russell Group (the 24 most research-intensive UK universities) and the other belonged to Universities UK, which represents 137 institutions. The differences were reflected in their support for start-up businesses. The Russell Group university adopted a traditional physics-based approach to incubation, while the Universities UK institution supported a virtual incubator, which was open to a much wider range of businesses. Hence, we suggest that the nature of the university in which an incubator is established will have a key role in shaping the approach to business incubation. This can be summarised in the extent to which an institution fulfils the requirement for being an 'entrepreneurial university' (Etzkowitz *et al.*, 2000). The UK paper *Times Higher Education* makes an annual award,

[6] https://results.ref.ac.uk/(S(whvf1ztk1p41c5y15ssuj01e))/Results/ByUoa/19/Impact (accessed December 2020).

sponsored by the National Centre for Entrepreneurship in Education,[7] for the 'outstanding entrepreneurial university' based on the following criteria:[8]

- 'vision and strategy place enterprise, entrepreneurship and innovation at the heart of the organisation';
- an environment that 'encourages entrepreneurial mindsets and behaviours in staff and students, and ensures that ideas and innovation are nurtured and given the support they need to flourish';
- 'the strategic approach to entrepreneurship has the potential to influence and improve other institutions' work in this area, whether directly or because it is transferable in the sector more widely'.

Loughborough University won the 2019 award, indicating a strong commitment to supporting student entrepreneurship. The university also hosts a business incubator, LU Inc.; 'Our community is made up of graduate start-ups, spinouts led by researchers or academic staff and founders from outside Loughborough University, looking for a vibrant start-up environment.'[9] The other indicator of a university's commitment to supporting entrepreneurship and small business in the UK is the Small Business Charter (SBC) of the Chartered Association of Business Schools. As indicated on its website,[10] 'The Small Business Charter (SBC) award gives recognition to business schools that play an effective role in supporting small businesses, local economies and student entrepreneurship'. Currently, 33 business/management schools are members of the SBC. Entrepreneurial universities (Etzkowitz, 2003; Woollard *et al.,* 2007) share a commitment to local and regional economic development through a focus on entrepreneurship and innovation. Such institutions will demonstrate their support for student entrepreneurship by providing incubation or hatchery facilities (Culkin and Mallick, 2010; McAdam and McAdam, 2006; McAdam and Marlow, 2007).

[7] https://ncee.org.uk/about-us/ (accessed 24 September 2020).
[8] https://www.the-awards.co.uk/2020/en/page/categories-and-criteria (accessed 24 September 2020).
[9] https://www.lusep.co.uk/lu-inc (accessed 24th September 2020)
[10] https://charteredabs.org/small-business-charter/ (accessed on 24th September 2020)

While experiential learning theory (Kolb, 1984) has been important to a better understanding of entrepreneurship, it is suggested that such learning is 'backward looking' (Berends *et al.,* 2016). According to Berends *et al.* (2016), experiential learning is based on an individual entrepreneur's reflections on previous experiences and ignores their sensemaking activities related to the future needs of their businesses. Berends *et al.* (2016) argue that a cognitive approach to learning, which they describe as 'forward looking', places greater emphasis on the future than on the past. Our view is that experiential learning and cognitive learning are, in practice, complementary and reflect two sides of the same coin. Jones and Giordano (2020) suggest that experiential learning feeds forward into cognitive learning and the latter 'feeds backward' into experiential learning (Gavetti and Levinthal, 2000). The two processes are part of a continual learning cycle in which previous experience and understanding are the basis for the next stages in the opportunity identification and development process (Figure 1). Learning activities by which knowledge and skills are transformed into business opportunities and the beginnings of new entrepreneurial identities are embedded in the inner boundary (feed forward/feed back). This is where learning occurs at a more individual level as well as via interactions between members of the incubator community. These interactions are based on their different types of prior knowledge as well as new information, skills, experiences and resources acquired while in the incubator. Also, as individual incubatees, and the group, become more familiar with the issues associated with entrepreneurship (learning as becoming) their identities as 'real' entrepreneurs are increasingly legitimised (Kasperova *et al.,* 2018; Klapper and Refai, 2015; Wenger, 1998).

The core of our argument is that those based in a UBI should be encouraged to contribute to a learning community of practice. In Figure 1, the outer ellipse represents this incubator community of practice, where incubatees' human capital (resources, skills, knowledge and experience) combines with inputs from the IM to develop their business ideas

and create new entrepreneurial identities (Klapper and Refai, 215: 165–166). During the incubation process, all incubatees should be encouraged to acquire new skills and new knowledge by regular interaction with members of their peer group as well as with the management team, business mentors/advisors, experienced entrepreneurs and business owners.

As pointed out by Wright *et al.* (2017), UBIs supporting student start-ups should be linked into the regional ecosystem. Their model includes several factors in addition to the incubator/accelerator: entrepreneurs (faculty, student, post-docs and alumni), support (corporate, public agencies, alumni, technology transfer offices), investors (government grants, business planning competitions, university seed-corn funds, crowdfunding, angel investors, venture capitalists), as well as the regional institutional context (Wright *et al.,* 2017: 911). Other authors suggest several additional actors in effective regional ecosystems, such as a skilled labour force, suppliers, customers and markets (Kumar *et al*, 2020; Nicholls-Nixon *et al*, 2020). The importance of links between incubator and ecosystem are summarised by Nair *et al.* (2020: 9): 'Late-phase support systems, such as incubators and accelerators, are essential components of an ecosystem that facilitates new venture creation, by providing critical tangible and intangible resources'.

Figure 1 illustrates the factors influencing the creation of a student community of practice in a university-based incubator (UBI). The aim is to take undergraduate and postgraduate students who are interested in entrepreneurship and support them in developing feasible business ideas and new identities as entrepreneurs. Ultimately, students should graduate from the UBI with the knowledge and experience to create a functioning new business. However, those that decide entrepreneurship is not for them should still benefit from the skills and experience gained while in the incubator. The creation of a successful UBI community of practice should have several benefits for the region and for the university (Wright *et al.,* 2017). New businesses should feed in to the local ecosystem, building higher

levels of economic activity and creating new job opportunities. For the university, a successful incubator should demonstrate the institution's support for the regional economy and help to attract enterprising students to a range of different programmes.

Conclusions

Over the last twenty years there has been increasing interest in entrepreneurship (enterprise) education in UK higher education institutions. Most universities now offer programmes and modules focused on the creation of new businesses. At the same time, many universities have invested in business incubation facilities to support students and graduates in navigating the complexities of starting their own businesses. The main contribution of this paper is to draw on a wide range of literature associated with business incubation, entrepreneurial learning and communities of practice to develop a model of an effective university-based incubator (see Figure 1). As Horner *et al.* (2019) point out, the extent to which universities engage in activities associated with technology transfer is based on the strategic choices made by senior managers. Therefore, any decision to create and operate a UBI must fit with the university's broad strategy related to the support of students contemplating a move into entrepreneurship (Culkin and Mallick, 2010; Soetanto and Jack, 2016). As we discuss above, this can be summarised by the extent to which an institution meets the criteria to be designated an 'entrepreneurial university' (Carayannis and Rakhmatullin, 2014; Etzkowitz, 1998; 2003; McAdam *et al.,* 2016).

The central thrust of our argument is that, once established, a UBI should become a genuine learning-based community of practice (Farnsworth *et al.,* 2016; Lave and Wenger, 1991; Wenger, 1998; 2009; Wenger *et al.,* 2002). Figure 1 demonstrates that the incubator manager/management team will have a central role in developing a community of practice (Kakabadse *et al.,* 2020). Although there are conflicting views about the best background for

the manager of an incubator (Redondo and Camarero, 2017), it seems clear that IMs need to balance the institutional output requirements while offering mentoring and support to incubatees (Nair and Blomquist, 2019; Redondo and Camarero, 2019b). IMs also have an important role in the selection of candidates (Van Weele *et al.,* 2019) who will become active members of the learning community. Entrepreneurial clubs and societies (Pittaway *et al.*, 2011; 2015) as well as university educators (Matlay, 2009) and researchers (Barnes *et al.,* 2015) can also play an active role in the creation of a community of practice. The human capital (Jayawarna *et al.,* 2015) of those entering the incubator, in the form of resources, knowledge and experience, and skills, will also influence the extent to which knowledge is shared amongst member of the community of practice (Nonaka and Konno, 1998; Nonaka and Toyama, 2015; Rennemo and Åsvoll, 2019). Consequently, regular dialogue between incubatees will promote and facilitate reflective learning (Baker *et al.,* 2005; Farnsworth *et al.,* 2016; Kolb and Kolb, 2005).

At the core of our model are the learning processes that transform inexperienced students and graduates into entrepreneurs with the ability to establish new businesses with the potential for longer-term survival and growth (Jones and Giordano, 2020). The feed-forward (cognitive) and feed-back (experiential) learning processes (Berends *et al.,* 2016) shape the development of incubatees' business ideas (Ardichvili *et al,* 2003), as well as their entrepreneurial identitities (Kasperova *et al.,* 2018). Various authors have suggested that, to be entirely effective, UBIs need to be linked to the local ecosystem (Breznitz and Zhang, 2019; McAdam *et al.,* 2016; Nicholls-Nixon *et al.,* 2020). Therefore, we propose that incubator managers need to cultivate links with a number of actors, including business mentors and advisors, potential funders (business angels/venture capitalists), other regional incubators, small firms and policy-makers.

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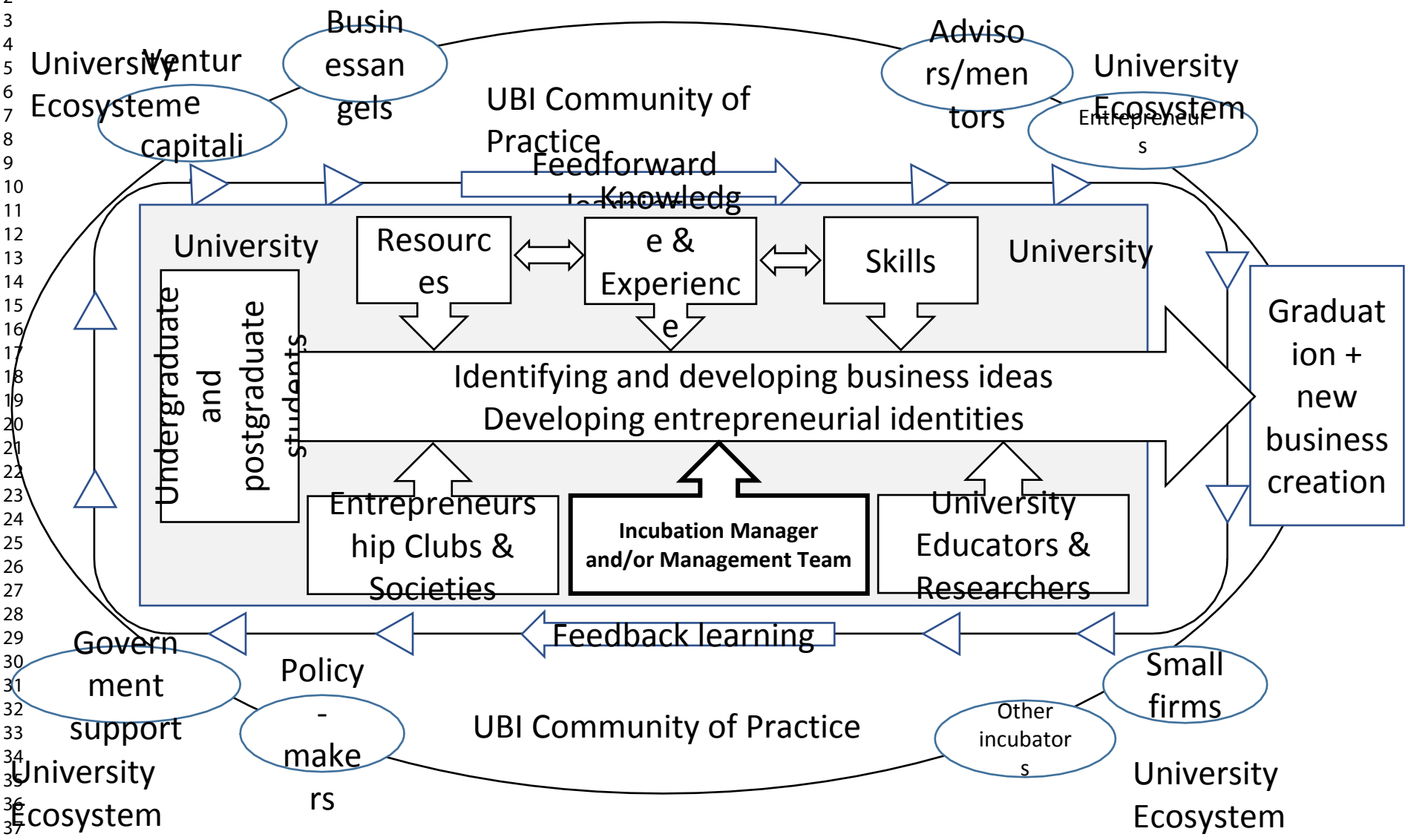
Figure 1 is supplied in separate PPT file.

Figure 1. The student entrepreneur community of practice.


University Ecosystem
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Entrepreneurs
Feedforward Knowledg
University
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Resourc es
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Skills
University
Identifying and developing business ideas
Developing entrepreneurial identities
Entrepreneurs hip Clubs & Societies
Incubation Manager and/or Management Team
University Educators & Researchers
Graduat ion + new business creation
Feedback learning
Govern ment support
Policy - make rs
UBI Community of Practice
Other incubator s
Small firms
University Ecosystem
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