Guest editorial

Entrepreneurial education ecosystems

Introduction

Whilst there has been a large global increase in management and entrepreneurship education, there are still areas that need development in terms of entrepreneurial education ecosystems (Berglund and Verduyn, 2018). This is due to the interdisciplinary and complex nature of entrepreneurship education that requires a continual re-evaluation of appropriate pedagogy (Henry and Lewis, 2018). The aim of this special journal issue is to evaluate the current status of management and entrepreneurship education by providing pathways for future research. This will help to consolidate and build momentum to ensure a more coherent body of knowledge emerges from the entrepreneurship education literature. This editorial discusses the role of entrepreneurial education ecosystems but focussing on the changes in the international environment. The papers from the special journal issues are stated then policy implications and future research suggestions stated.

Entrepreneurship education ecosystems are a curriculum model that integrates a stakeholder perspective to understand changing dynamics in the business environment (Gorman *et al.*, 1997). As an instructional model, entrepreneurship education is distinguished by its authentic nature that helps prepare students for future studies (Kuratko, 2005). Thus, entrepreneurship education ecosystems provide a way to connect different components in the business, social and economic environment. In an ecosystem, there is a sense of interactivity amongst members that facilitates growth and change. Central to the idea of an ecosystem is that it is continually changing based on how relationships evolve, which is relevant in the education industry that relies on different stakeholders to facilitate change. Some education ecosystems are bounded by geography or content whilst others are open to new membership (Huq and Gilbert, 2017). Therefore, given the technological changes in the workplace and societal attitudes towards self-employment, entrepreneurship education ecosystems are becoming more necessary (Gorman *et al.*, 1997). Regardless of a student's main field of study, there is a desire to develop their own businesses in the future and a need to take into account different stakeholder perspectives.

Entrepreneurship is defined generally as activity that has an innovative, proactive and risk taking dimension. This can involve some uncertainty as to the future outcomes but more forms of entrepreneurship tend to take a positive view on the outcome (Dickson *et al.*, 2008). Due to the increased complexity of the global economy, entrepreneurship ecosystems are viewed as creating new values or capabilities that are characterised by creativity although it can take different forms such as individual entrepreneurs, corporate entrepreneurs or government entrepreneurs. There are some myths about entrepreneurship including that uncalculated risks and high technology ventures are required. In reality, many entrepreneurs are involved in companies that range in size and industry structure. In addition, entrepreneurship often results from people with little business experience but who have a novel idea persevering with introducing it into the marketplace. This means entrepreneurship education can help facilitate business start-up rates by providing knowledge and information (Fayolle *et al.*, 2006). Thus, creating more of an ecosystem approach to entrepreneurship education can have a positive impact on the rate of entrepreneurship in society (Neck and Greene, 2011). This is important with the rise in the number of innovative products and services entering the market on a constant basis, which

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has meant more emphasis on creativity in business as a way to sustain competitiveness (Perren, 2003).

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Much of the interest in entrepreneurial education ecosystems derives largely from the Bayh-Dole Act in the United States that transferred ownership of intellectual property from research agencies to universities (Siegel *et al.*, 2007). This resulted in university incubators emerging as a way to facilitate the commercialisation of research by providing resources for emerging businesses. The idea of university incubators is to utilise embedded networks in a higher education ecosystem environment to support start-up firms. The creation of viable start-ups requires both formal and informal support mechanisms that facilitates the ideation process (Gately and Cunningham, 2014). Whilst university incubators are normally located within a university, university spinoffs are another form of organisational structure that occurs when a business idea coming from a university ecosystem environment becomes a reality. University spinoffs involve exploiting knowledge developed in a university (Pirnay and Surlemont, 2003). This enables research results to be utilised for external benefits that enable ideas to reach their full potential. Prior research by Audretsch and Stephan (1996) found that entrepreneurs normally create contacts with others in the same geographic location. Thus, university spinoffs contribute to facilitating a vibrant entrepreneurial ecosystem in a region.

Universities provide a context for international entrepreneurship, which is important for business development (Evers *et al.*, 2016). This is important as universities facilitate the transfer of knowledge across international borders. Students, faculty and administrators at universities are part of an international network based on knowledge transfer (Honig, 2004). More universities are trying to internationalise their operations by having collaboration with international partners in teaching, research and engagement. This has facilitated an international flow of knowledge that helps increase the performance of academic institutions (Pretorius *et al.*, 2005). Traditionally, universities were considered more as a teaching and research institution but more emphasis is now on building entrepreneurial ecosystems that facilitate technology transfer and commercialisation.

Overview of papers in the special journal issue

The first paper titled "TTO characteristics and university entrepreneurship: A cluster analysis" by Mariluz Fernandez-Alles, Juan Pablo Diánez-González, Tamara Rodríguez-González and Mercedes Villanueva-Flores discusses the role of technology transfer offices in facilitating entrepreneurship education. The second paper titled "Determinants of high-growth university spin-offs in Spain" by Sara Fernández-López, David Rodeiro-Pazos, Fernando García González and Maria Jesús Rodríguez-Gulías focuses on the importance of university spin-offs in the global economy. The third paper titled "Relational university, learning and entrepreneurship ecosystems for sustainable tourism" by Rosa María Torres Valdés, Carolina Lorenzo Álvarez, Javier Castro Spila and Alba Santa Soriano focuses on the role of entrepreneurial ecosystems in creating a good learning environment. The fourth paper titled "University entrepreneurship: how to trigger entrepreneurial intent of undergraduate students?" by Paola Isabel Rodríguez Gutiérrez, María del Pilar Pastor Pérez and Patricia Alonso Galicia focuses on the development of university entrepreneurship ecosystems. The fifth paper titled "Academic entrepreneurship in the context of education: The role of the networking behaviour of academics" by Sue Rossano-Rivero and Ingrid Wakkee focuses on the need for academics to be embedded in an entrepreneurial learning ecosystem. The sixth paper titled "Public policies for entrepreneurship and

internationalization: Is there a government reputation effect" by João Campos, Vitor Braga and Aldina Correia focuses on the need for entrepreneurship to take into account government policies.

Policy and future research suggestions

Entrepreneurship education contributes to employability rates of individuals as it focuses on teaching practical skills. As there is more emphasis on start-ups in the global economy more attention has been placed on the role of entrepreneurship education. The long-term impact of entrepreneurship education requires more research due to its influence on economic growth rates. This will help encourage individuals to be entrepreneurs due to the wider career choices and emphasis on self-employability. The flexibility that entrepreneurship encourages in individuals work life is important, as there are emerging trends and changes in society. This will help government policy makers make better decisions about entrepreneurship education and how to support enterprise agencies. The higher education sector needs to foster more entrepreneurship education that incorporates different perspectives about the role of business venture creation (Pittaway and Cope, 2007). This can include educators, the business community and government support agencies that realise the need for self-employment in order to achieve sustainable business growth there needs to be entrepreneurship education embedded in course design. This helps students learn entrepreneurial skills that build their knowledge base. In addition, higher education institutions can provide more entrepreneurship education to satisfy student demand for creating their own businesses (Vesper and Gartner, 1997). Entrepreneurship education provides a way to incorporate experiential learning that enables students to develop business ideas.

The best way to study entrepreneurship is through a blended learning approach that integrates practical experiences with traditional in class teaching methods. Often business ideas occur by chance and evolve rather than the preconception that detailed planning is involved. This includes group work and peer learning that facilitates a more interactive experience for students. There are different activities required in entrepreneurship so the curriculum needs to take into account evolving and multiactivity processes (Wilson *et al.*, 2007). To foster entrepreneurship there needs to be education about how to respond to customer needs by being innovative. However, there is still a disconnect between current entrepreneurship education and market trends due to the increased dynamism of markets. This has resulted in a need for entrepreneurship educators to change their pedagogy approaches to better prepare aspiring entrepreneurs for the market. Thus, government policy needs to further encourage more educators to teach entrepreneurship related courses as a way to respond to demand from business, government and society.

More work is required to understand how an individual's mind-set and emotions are sharpened by entrepreneurship education. This will help to assess changes in attitudes and behaviours that are intended learning outcomes from entrepreneurship education. Better pedagogical methods that enhance the process of learning in entrepreneurship education are required. This includes focussing on the dynamics of learning to indicate how individuals self-report their attitudes towards entrepreneurship. Entrepreneurship education is fundamentally about practical skills that are developed by taking an active learning approach. The curricula of entrepreneurship education subjects needs to take into account external environmental factors impacting future business growth.

Vanessa Ratten
La Trobe University, Melbourne, Australia

References

Audretsch, D.B. and Stephan, P.E. (1996), "Company-scientist locational links: the case of biotechnology", *The American Economic Review*, Vol. 86 No. 3, pp. 641-652.

Berglund, K. and Verduyn, K. (Eds) (2018), *Revitalizing Entrepreneurship Education: Adopting a Critical Approach in the Classroom*, Routledge.

Dickson, P.H., Solomon, G.T. and Weaver, K.M. (2008), "Entrepreneurial selection and success: does education matter?", *Journal of Small Business and Enterprise Development*, Vol. 15 No. 2, pp. 239-258.

Evers, N., Cunningham, J.A. and Hoholm, T. (2016), "International entrepreneurship in universities: context, emergence and actors", *Journal of International Entrepreneurship*, Vol. 14 No. 3, pp. 285-295.

Fayolle, A., Gailly, B. and Lassas-Clerc, N. (2006), "Assessing the impact of entrepreneurship education programmes: a new methodology", *Journal of European Industrial Training*, Vol. 30 No. 9, pp. 701-720.

Gately, C. and Cunningham, J. (2014), "The contributions and disconnections between writing a business plan and the start-up process for incubator technology entrepreneurs", *Academic Entrepreneurship: Creating an Entrepreneurial Ecosystem*, Emerald Group Publishing Limited, pp. 197-241.

Gorman, G., Hanlon, D. and King, W. (1997), "Some research perspectives on entrepreneurship education, enterprise education and education for small business management: a ten-year literature review", *International Small Business Journal: Researching Entrepreneurship*, Vol. 15 No. 3, pp. 56-77.

Henry, C. and Lewis, K. (2018), "A review of entrepreneurship education research: exploring the contribution of the education + training special issues", *Education + Training*, Vol. 60 No. 3, pp. 263-286.

Honig, B. (2004), "Entrepreneurship education: toward a model of contingency-based business planning", *Academy of Management Learning and Education*, Vol. 3 No. 3, pp. 258-273.

Huq, A. and Gilbert, D. (2017), "All the world's a stage: transforming entrepreneurship education through design thinking", *Education + Training*, Vol. 59 No. 2, pp. 155-170.

Kuratko, D.F. (2005), "The emergence of entrepreneurship education: development, trends, and challenges", *Entrepreneurship Theory and Practice*, Vol. 29 No. 5, pp. 577-598.

Neck, H.M. and Greene, P.G. (2011), "Entrepreneurship education: known worlds and new frontiers", *Journal of Small Business Management*, Vol. 49 No. 1, pp. 55-70.

Perren, L. (2003), "The role of e-mentoring in entrepreneurial education and support: a meta-review of academic literature", *Education + Training*, Vol. 45 Nos 8/9, pp. 517-525.

Pirnay, F. and Surlemont, B. (2003), "Toward a typology of university spin-offs", *Small Business Economics*, Vol. 21 No. 4, pp. 355-369.

Pittaway, L. and Cope, J. (2007), "Entrepreneurship education: a systematic review of the evidence", *International Small Business Journal: Researching Entrepreneurship*, Vol. 25 No. 5, pp. 479-510.

Pretorius, M., Nieman, G. and Van Vuuren, J. (2005), "Critical evaluation of two models for entrepreneurial education: an improved model through integration", *International Journal of Educational Management*, Vol. 19 No. 5, pp. 413-427.

Siegel, D.S., Wright, M. and Lockett, A. (2007), "The rise of entrepreneurial activity at universities: organizational and societal implications", *Industrial and Corporate Change*, Vol. 16 No. 4, pp. 489-504.

Vesper, K.H. and Gartner, W.B. (1997), "Measuring progress in entrepreneurship education", *Journal of Business Venturing*, Vol. 12 No. 5, pp. 403-421.

Wilson, F., Kickul, J. and Marlino, D. (2007), "Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: implications for entrepreneurship education", *Entrepreneurship Theory and Practice*, Vol. 31 No. 3, pp. 387-406.