INNOVATION AND ENTREPRENEURSHIP IN EDUCATION

ADVANCES IN DIGITAL EDUCATION AND LIFELONG LEARNING

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PREFACE

In the mid-twentieth century, political scientist Joseph Schumpeter developed a theoretical basis for the business phenomenon he called "Creative Destruction," where (typically technological) advances launch the game-changing disturbances that cause significant economic upheaval and introduce new patterns to cyclical business activities. In doing so, he drew heavily upon the fundamental notions of Marxism and integrated them with the concept of entrepreneurship, which he defined as "the doing of new things or the doing of things that are already being done in a new way" – in other words, innovation.

Schumpeter also noted the observations of others that "the spirit of adventure and the element of innovation" are essential for a complete formulation of the entrepreneurial function. He characterized entrepreneurs as people who see new possibilities and can deal with the resistance that "doing new things always meets with outside of the ruts of established practice." However, being a macroeconomist, Schumpeter was primarily focused on interpreting the longer term effects of innovation and entrepreneurship on entire nations and large corporations. His interests lay in understanding the broad role of creativity in terms of economic history and theory over time. So he was less concerned with examining the practical day-to-day business aspects of "getting new things done," or identifying innovative ways to promote such venture activity through education and sociocultural policy.

Fast-forward several decades to the 1970s, and we begin to see signs of the emergence of modern-day start-up culture, especially in the information and communications technology sector. In comparison with most entrepreneurs of a hundred years earlier, it was now becoming feasible to get viable new ventures off the ground with relatively modest early-stage investments. Despite the appreciable risks and high failure rate among such companies, the conspicuous success of the major winners inspired an emerging demand from students for courses in start-ups and ventures, and innovative educators at many colleges and universities started to incorporate such offerings into their business curricula.

However, it took some additional time for another important educational insight to emerge – since key innovations typically take place at the intersection of disciplines, the entrepreneurial ventures curriculum needed to look beyond pure business and marketing, and reach out to embrace multiple specialist fields. The pedagogical process had to adopt approaches like Design Thinking, and encourage meaningful participation by students from different disciplines, in particular from the soft and hard sciences, engineering, creative arts, and elsewhere. Many conventional third-level institutions have found this integration task quite a challenge; the traditional structure of academic organizations, along with professional recognition and reward policies, frequently discourage reaching too far across disciplinary boundaries.

On the other hand, many creative second-level schools and colleges have successfully introduced various types of educational programs and transition year activities that promote entrepreneurial innovations by student-run teams. Such programs are often built upon a format that links business ideas from hobbyist youth venues – such as maker fairs, game-building camps, and robotics competitions – with venture visions inspired by popular culture phenomena like crowd-funding and Dragons' Den style reality television. An important outcome of this experiential methodology is that students can discover a great deal about their own personal aptitudes, strengths, and weaknesses in a creative and safe, yet potentially opportunistic, environment. In terms of individual growth, this process can help students to develop more self-confidence and independence, with resultant life benefits beyond just pure business innovations.

It also seems likely that providing young people with entrepreneurial learning experiences of this type offers them an enhanced ability to envision creative approaches to achieving social change. Encountering ideas like Designing for Impact can help them to develop a heightened sensitivity to societal needs and an awareness of the potential for community-centric innovation. For educational strategists and policy-makers, the challenge is to find effective ways to deploy such programs well beyond the more affluent schools and academies, and introduce them into the lesser-privileged neighborhoods and regions of the world where they are most needed.

As we explore these approaches to educating students about innovation and entrepreneurship in the "real" world, our attention is drawn to the effects that Schumpeter's creative destruction forces are having upon the education system itself. The world's most prestigious universities can well afford to lend their names to global partnerships, online courseware offerings, MOOCs, and other ubiquitous learning initiatives without noticeable

impacts on their elite branding. The result has been that faculty members at many of the remaining institutions have had to rapidly adapt to these new realities – by introducing flipped classrooms, online learning management systems, and assessment games and simulations, for example. However, there are significant hurdles associated with doing things "outside of the ruts of established practice," not least because of financial and administrative burdens involved. These changes, which are simultaneously exciting and challenging, are all a far cry from the transition away from printed course materials and toward e-textbooks that started just a few years ago.

Against this broad background, "Innovation and Entrepreneurship in Education" offers a comprehensive suite of theoretical models, use cases, and experimental studies encompassing all aspects of this important topic. The ideas and insights presented here cast a range of spotlights on this multi-faceted domain, which constitute a very timely set of resources on the enterprise of education for researchers, innovators, and practitioners alike.

John Murray

INTRODUCTION

Innovation and Entrepreneurship (I&E) have been in the center of attention of researchers, policy-makers, and stakeholders of the business world for a long time. Nevertheless, the focus of I&E keeps evolving, adding new points of view and expanding the traditional perception referring to the process of creating a business. Entrepreneurship is not just a subject of political discourse or strictly confined within a Business School curriculum. I&E Education may refer to learning (a) "about" I&E, in which students understand the theory behind I&E practice, (b) "for" I&E, which teaches students tools and methods on how to do business, (c) "through" I&E, where students gain knowledge by simulating the experiences of actual entrepreneurs and innovators, and (d) "scope" on a broader and more socially oriented focus.

For example, Entrepreneurship may refer to environmental, medical, bio-chemical, and social entrepreneurship and it goes beyond starting a business, referring to seeking opportunities for new products and services across a plethora of disciplines. In these terms, being entrepreneurial means being creative, innovative, and capable of understanding and dealing with risk and uncertainty, and taking initiative in turning ideas into actions and dealing with day-to-day life at home and in society. As such, being entrepreneurial and innovative is not just a goal or a discipline, but also a way of thinking; a mind-set and a personal identity.

This book explores the concepts of innovation and entrepreneurship through multiple lenses in the context of education. By including equal parts of theory and practice, this volume of the *Advances in Digital Education and Lifelong Learning* book series takes a closer look on how Innovation and Entrepreneurship are approached around the globe as disciplines, methods, and mind-sets. Focusing on ubiquitous learning and transcending the borders of formal, informal, and non-formal learning, the book presents theoretical models and case studies of initiatives, practices, and projects on how innovative pedagogies and ICT could support the development of innovation and entrepreneurial skills for business and everyday life.

Featured chapters illustrate how emerging learning theories and technology could become powerful agents in nurturing creativity, self-efficacy, problem-solving, social connectedness, and inclusion. The book provides a glimpse at the state-of-the-art in innovation and entrepreneurship in education as seen through the latest academic studies and business currents.

Offering complementary perspectives, the book is organized around five themes related to Innovation and Entrepreneurship, namely (a) trends and approaches of I&E in Higher Education, (b) supporting Social I&E, (c) innovative pedagogies and learning communities, (d) study programs and competitions on I&E, and (e) applications of I&E approaches in Business and Educational Technology. Each theme provides additional insights on the plethora of methods, concepts, and approach that the Innovation and Entrepreneurship terms may carry for people with different backgrounds.

TRENDS AND APPROACHES OF I&E IN HIGHER EDUCATION

Starting with formal higher education, the first part of the book focuses on the way the issues of Innovation and Entrepreneurship are integrated into curricula. Innovation and entrepreneurship appear both as academic fields and strategic goals in higher education.

Chapter 1

In Chapter 1, titled "Assessment *for* Learning in Innovation and Entrepreneurship Education," Radmila M. Rasmussen discusses the issue of assessment in I&E Education at the university level. Considering that the research on how assessment in I&E education impacts students learning is limited, this chapter provides important contribution, by identifying links between formative assessment types and enhancement of student learning.

The chapter analyzes 10 cases from 7 universities in Denmark and focuses on teacher's perspective, exemplifying how I&E educators view and apply formative assessment as an important tool in enhancing learning benefits for students. Analysis results suggest that formative and learner-centered assessment, such as logbooks, learning journals, prototypes, and informal feedback sessions have a crucial potential for enhancing students' transformative learning.

Chapter 2

Richard Tunstall, Lenita Nieminen, Lin Jing, and Rasmus Hjorth discuss in Chapter 2 the issue of developing creativity and entrepreneurial capabilities amongst students. In their chapter titled "Out of the Blue: Teaching Creativity and Entrepreneurship through Flashmobs," the authors present a conceptual model of the iterative nature of creativity and entrepreneurship as separate cognitive and social processes leading to aesthetic or sensemaking outcomes. The chapter supports educational practice and research on learning through entrepreneurship in allowing educators and researchers to evaluate how learning activities may directly contribute to students' learning through experience and the development of their creative and entrepreneurial mind-set.

The proposed framework of learning activities aims at Secondary and Tertiary Education and is based on entrepreneurially teaching. The authors evaluate a range of different approaches, including business planning, simulations, roleplay, co-creation, and flashmobs. The latter are proposed to be most suitable and an outline learning activity design is mapped in detail against creative and entrepreneurial processes.

Chapter 3

The combination of design thinking and lean start-up is the focus of Chapter 3. In his chapter titled "How to Become a Lean Entrepreneur by Applying Lean Start-Up and Lean Canvas?," Patrick Link describes the "smart-up" program of Lucerne University of Applied Sciences and Arts (LUASA), a holistic approach to foster entrepreneurial thinking and behavior. According to the program, the focus is on Design Thinking in early phases in order to understand the problem and gain empathy. Then an enhanced own Lean Canvas version is used for having a guideline to work on the important questions and documenting the learning in the iterative process.

The proposed Smart-up Lean Canvas has been proven to be a key tool to develop innovative ideas in start-ups as well as in existing companies. The program started three years ago as a pilot in two departments and has now rolled out to the entire university, with a total of 120 start-ups already founded.

SUPPORTING SOCIAL I&E

The second part of the book focuses on society and social value creation. By applying strategies, methods, and techniques from the business world, Social I&E aims at addressing social, cultural, and environmental issues.

Chapter 4

In her chapter, titled "Social Innovation Education: Designing Learning for an Uncertain World," Bethany Alden-Rivers proposes Social Innovation Education as a new pedagogy for the 21st century, suggesting a reconceptualization of undergraduate education to support the development of students as agents of positive social change. Chapter 4 provides insights based on a series of studies conducted at University of Northampton in 2014 and 2015, investigating Social Innovation Education as a pedagogical approach. Research findings include an ontology for understanding the concept of social innovation education, as well as a set of graduate attributes for designing learning for social change. A model of pedagogical praxis is proposed that supports the development of teaching and learning toward a more critical and socially impactful approach.

Chapter 5

In Chapter 5, Ioannis N. Katsikis and Lida P. Kyrgidou examine the institutional role of public social policy and the individual role of private social entrepreneurship on the process of social change and value creation. Their chapter, titled "Social Policy and Social Entrepreneurship: Between the Public and the Private," focuses on identifying the common and distinctive characteristics of these two fields and analyze how each contributes to social value creation. In addition, the chapter examines how these two agents can interact in order to enhance their positive impact to society. Finally, the authors highlight the importance of social public entrepreneurship as a distinctive way of developing public social policies within a market context, based on business mechanisms.

INNOVATIVE PEDAGOGIES AND LEARNING COMMUNITIES

The third part of the book provides insights through case studies on how innovation in pedagogy could further enhance the learning experience for the students. Innovation and Entrepreneurship methods and practices are applied into instructional design. The focus is now shifted from creating a business to create value for one's self, by supporting collaboration, reflection, and the development of an entrepreneurial mind-set.

Chapter 6

In Chapter 6, Brendan F. D. Barrett touches the issue of innovation in education, providing insights on the feasibility of connecting classrooms at a number of universities in the Asia Pacific region in a sustainable and low cost manner through the use of videoconferencing. His chapter, titled "Innovative Approach to the Formation and Sustainability of a Learning Community Connecting Students in University Classrooms across Asia Pacific," describes the case of a new form of innovative educational program that is based on the effective use of readily available technology that is often under-utilized, due to lack of familiarity or negative perceptions amongst the faculty.

The connected classroom in the proposed inter-university model offers a multitude of different perspectives to students and educators that could be more valuable than traditional instructional approaches, especially when dealing with complex topics like climate change, energy, and food security, where the sharing of knowledge is crucial.

Chapter 7

The establishment of innovative pedagogies and the creation of online communities of learning is the focus of Chapter 7, titled "Entrepreneurship and Education: The "InnoEntre" Project." In this chapter, Lida P. Kyrgidou, Theodosios Sapounidis, and Ioannis Stamelos describe the case of an entrepreneurial program that brings together students and educators from Aristotle University of Thessaloniki, Greece, and Aarhus University,

Denmark, and examines its effect on participants' attitudes and perceptions toward entrepreneurship, within the wider context of entrepreneurship and education.

The program is part of the wider ongoing "InnoEntre" Erasmus+ project, in which learners across Europe are expected to interact, come up with novel ideas, and transform them through a business plan, into a value-creating outcome, while presenting the steps, actions, experiences, and insights. The chapter highlights the importance of the use of certain appropriate methods, models, and practices, and the use of ICT in supporting the development of business ideas into actual ventures.

Chapter 8

Klaus Thestrup and Sarah Robinson provide another perspective on the "InnoEntre" Erasmus+ project. In Chapter 8, titled "Towards an Entrepreneurial Mindset: Empowering Learners in an Open Laboratory," they demonstrate how Humanities students in a blended learning course at Aarhus University become active learners, use an entrepreneurial approach, and reflect on the achievement of an entrepreneurial mind-set.

The authors suggest that nurturing experimental communities of practice in open learning laboratory settings may provide an opportunity for establishing an entrepreneurial mind-set in students and, as such, has to the potential as a method to confront future societal challenges.

STUDY PROGRAMS AND COMPETITIONS ON I&E

Innovation and Entrepreneurship support has been a strategic priority to many Higher Education Institutes and Organizations. The forth part of the book provides three case studies of I&E courses and competitions, providing insights on how different approaches have and implemented in different contexts.

Chapter 9

In their chapter, titled "Delivering an Entrepreneurship-Focused MBA in the UAE," authors Abdullah Abonamah, Sophia Korayim, and Llewellyn

D. W. Thomas paint a picture on how the I&E Education is implemented in the context of the Gulf region. Chapter 9 offers an analysis of the challenges associated with the design and delivery of an MBA in the Abu Dhabi School of Management.

The authors provide insights into specific MBA program attributes that need to be customized for the UAE, including assessment, case study use, and delivery format. Specific cultural norms and practices need to be taken into account to ensure that the program and its delivery are fit for the local country. Furthermore, the authors emphasize the importance of having local faculty for effective program delivery and the risks of, and approaches to, using international faculty who are not based in the country of delivery.

Chapter 10

In Chapter 10, Asunción Ibáñez-Romero and Jon Mikel Zabala-Iturriagagoitia suggest that being entrepreneurial and innovative is a way of thinking, a mind-set, and a personal identity. In their chapter, titled "iNNoVaNDiS: A 10-Year Experience in Entrepreneurship & Innovation Education," they describe iNNoVaNDiS, a study program that started in 2005 at the University of Deusto, Spain, aiming at training students to perform as entrepreneurs.

The chapter provides a narrative of the program evolution from the perspective of people that have been involved in it. The program is run by a team of people with very different profiles, including consultants, researchers, academics, coaches, artists, engineers, entrepreneurs, actors, etc. This diversity allows the program to be in constant renewal. The scope of iNNoVaNDiS has not been the development of a business, but rather to foster ethical entrepreneurship and innovative behavior in everyday life.

Chapter 11

In Chapter 11, titled "Poliempreende," Rafael Pedrosa provides a description of the Poliempreende program. The program, focused on the promotion and development of entrepreneurship amongst the polytechnics' academic community, aims at helping participants develop necessary skills for the creation of business initiatives, in an effort to support economic and social action through self-employment.

The project focuses on the cross-fertilization of knowledge area with the consequent enrichment of experiences, practices, and results, in particular by encouraging the setting up of multidisciplinary teams, with the goal to instill the spirit of initiative in the participants, the entrepreneurial willingness to create their own businesses and generate jobs, exploring the practical and professional character of their training.

APPLICATIONS OF I&E APPROACHES IN BUSINESS AND EDUCATIONAL TECHNOLOGY

The fifth part of the book provides two examples on how Innovation and Entrepreneurship methods, strategies, and concepts can be applied in Business and in Educational Technology.

Chapter 12

In Chapter 12, titled "Jugaad Innovation and Intrapreneurship at Pearson," Kelwyn Looi and Josh Fleming highlight some practical examples of how this innovation has affected business strategy and decision-making, enabling the company to be able to have a greater impact on learning and grow financially. Many of the examples in the chapter are from products and units that are continuing to embrace and adopt efficacy; they represent *live* examples of best practice.

The chapter follows a live case and represents a unique insight into the ongoing application of innovation and intrapreneurship in the field. The authors provide an overview of how the drive toward efficacy represents a new, innovative way of doing business. The approach is not new to education, but putting a focus on learner outcomes at the center of traditional business operations represents a step-change from how other companies in the sector operate.

Chapter 13

In Chapter 13, titled "Tangible User Interfaces for Programming and Education: A New Field for Innovation and Entrepreneurship," Theodosios Sapounidis, Ioannis Stamelos, and Stavros Demetriadis

provide an example of how innovation in the field of Educational Technology may create a new entrepreneurial landscape. Their chapter focuses on tangible user interfaces (TUIs), a new type of interface that expands the physical world, by pairing digital information to everyday physical objects.

The authors review existing products on TUIs and analyze design aspects that may offer new opportunities for innovation. The authors argue that although TUI design and research is still in its infancy and more design guidelines and research are required in order to further bridge the digital and the physical, the first signs of entrepreneurship in the field promise a bright future.

Throughout the 5 themes and the 13 respective chapters, the book draws a rich canvas that includes views on I&E education, social entrepreneurship, lean entrepreneurship, innovative pedagogies, creativity and problem-solving, entrepreneurial mind-set and identity, learning communities, regional and global perspectives, and case studies from academia and business.

We maintain that Innovation and Entrepreneurship are able to offer more than a way of creating business initiatives. They also provide the launching pad for personal growth and the development of a mind-set that will help the individual recognize challenges and opportunities in professional, social, and personal life. We hope that this book will be a valuable addition to the dialogue around the nature and purpose of I&E and will provide useful insights toward this perspective to the reader.

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