Q&A

Anna Trifilova, John Bessant, and Allen Alexander

Q. How Can You Teach Innovation and Entrepreneurship?

A. There is a plethora of textbooks on innovation and entrepreneurship, with many universities and consultants offering courses dealing with the subject. Their goal is to enable individuals to become entrepreneurs or for their organizations to create value from knowledge (innovation). A problem with much of this educational material is that it remains rather abstract and relies on the individuals to be able to put their learning into practice. This is a stumbling point for many organizations, where learners know how they must act as a result of their training and education but they lack the ability to do it. Learners gain considerable "explicit" knowledge, they fail to gain the tacit element that helps them to apply it.

We suggest that the challenge underlying the question of "How can you teach innovation and entrepreneurship?" relates to the mode of delivery and that there is a need for different approaches that enable the conversion from explicit to tacit knowledge. To address this important question about how innovation and entrepreneurship can be taught – effectively – we have undertaken a research project called "Teaching and Coaching Innovation Innovatively", or "TACIT" (see Box 1). Our project, however, is not a criticism of the current provision – indeed several of the individuals are part of the "traditional" delivery system. Rather, it is a recognition that such provision misses some key elements and in particular that there is a need to engage individuals in developing their personal skills to support change in their organizations. We suggest that they need to gain "tacit" knowledge, which is defined by an "ability to act", in this case in innovation and entrepreneurship and develop the ability to realize value creation from good ideas. This, however, is a significant challenge – the contemporary models for education do not lend themselves to learning-by-doing and skills development.

In terms of state of the art, we see that learning in times of constant change increasingly challenges educational institutions and business organizations alike. In contrast to past decades, knowledge has become more complex, contexts change faster, and knowledge is required in different contexts at the same time. Memorizing information and applying established methods within single fields is no longer sufficient where problems span cultural and functional boundaries (Brown & Vaughan, 2010; Kolb & Kolb, 2010; Mainemelis & Ronson, 2006; Thomas & Brown, 2011).

Our research focuses on the learning challenges that organizations and individuals face in developing understanding and skills for teaching, learning, and managing innovation. In particular we wish to explore the range and efficacy of different delivery modes and to provide methodologies for better matching context with such delivery modes. The design of the project reflects some core principles in innovation management: co-creation with partners and users and learning through prototyping and iterative experimentation. We will deliver several phases of work, each engaging all partners within the alliance and building on shared knowledge and experience. Below, we briefly introduce the teaching approaches for innovation and entrepreneurship that we are examining and developing inside our research project.

1. Storytelling

All innovation projects, whether new concepts at the start-up stage of a new business or development projects within established organizations, require "pitching" the idea to others to secure resources, commitment, and support. This requirement places emphasis on the need to develop a compelling narrative that can unfold as the innovation develops; recent years have seen an upsurge of interest in this approach and in the tools and techniques which can support it. How could we use the skills of storytelling to improve aspects of innovation management? Making more persuasive pitches? Developing a storyboard for entrepreneurial ideas? Carrying forward useful innovation management lessons from past experience within the organization.

Our current research involves testing the use of storytelling approaches amongst a sample of inexperi-

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Box 1. The TACIT Project

Teaching and Coaching Innovation Innovatively (TACIT) is a 3-year European Union Knowledge Alliance (2016–2018) project under the Erasmus+ programme. The objective of our project is to combine the efforts of business and university educators to create new learner-centred teaching methods, open up new learning opportunities, and develop the practical application of entrepreneurial skills. This will be framed as an innovative teaching module to be embedded in the existing curricula of higher-education institutions and in the corporate training programs.

The project is designed to develop and test mechanisms than can be used to build tacit knowledge in individuals around innovation and entrepreneurship. Our focus is not on developing a new core curriculum, but rather on taking the important elements of existing curricula and focusing on exploring more effective delivery mechanisms. In particular we are trying to capitalize on the shift in thinking towards new modes of delivery (e.g., the "flipped classroom" and the shift to massive open online courses (MOOCs)) but we are also exploring pedagogies that develop the individual's ability to face and adapt to the innovation and entrepreneurship challenge.

The project design reflects some core principles in innovation management, including co-creation with partners and users and learning through prototyping and iterative experimentation. As people's culture of learning is largely coined through the educational institutions, it seems natural to follow a threefold approach where research, teaching, and practice are understood as interdependent dimensions of knowledge, knowing, and learning (Sproedt & Heape, 2014). Participatory innovation (Buur & Matthews, 2008) brings these different strands together in the development and application of research-based teaching and teaching-based research for, with, and about innovation practice in organizations.

Partners in the TACIT project include: Aachen-Münchener, ASIIN, BMW, ISPIM, LEGO, Lufthansa Systems, Nokia and NHS Foundation Trust together with University of Exeter (UK); Southern Denmark University (Denmark), Leipzig Graduate School of Management (Germany) and RWTH International Academy, Aachen (Germany).

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enced entrepreneurs in several different contexts including in emerging economies, among social entrepreneurs, and with students. We are evaluating different storytelling tools and supporting frameworks (including innovation theatre, scenarios and simulation, design thinking laboratories, and variants on approaches using the business model canvas) and we are developing a methodology through which the issue of such techniques can be embedded as part of entrepreneur training and support. The approach will use individual and group-based techniques to develop and communicate stories using a variety of tools. In short, storytelling could be used to:

- extend the capacity for articulating and exploring innovation projects – for example in preparing for pitching ideas

- understand, explore, and define innovation opportunities and the challenges in delivering solutions by using a narrative approach

- understand different stakeholder perspectives

2. Walking the Talk – Peripatetic Learning

The great Greek philosopher Socrates had an idea that neuroscientists are now supporting – we are receptive to ideas when we are moving. Couple that with a truism, that changing our context makes us see things differently – and there is the basis for a new approach to learning about managing innovation. The core approach here is to use guided walks through landscapes which are full of examples of innovation – and explore them while in the open air, walking and discussing them away from the classroom context. In our project course, the aim is to create two fundamental learning outcomes:

- understanding of a number of key innovation theories, brought to life by viewing them using real, but historic examples, for example in an industrial/natural heritage environment

- consideration of the modes of transferring knowledge and creating deep learning using a case-based learning technique – but one that is presented in an unfamiliar learning environment (i.e., not in the classroom or on company premises) to create a rewarding and a novel learning experience

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3. Future-Based Learning

Innovation is about creating alternative futures and a powerful set of tools exist around scenarios and other projective techniques; some of these have been embedded in powerful methodologies such as Shell's Game changer programme or the Future Agenda consortium. This strand of work will set up an Imagining the Future Laboratory – a place where participants imagine alternative futures and explore within them opportunities and challenges which can form the basis of novel product or service concepts. From these rich pictures tools for "back-casting" and road-mapping can be used to develop clear pathways to take innovation opportunities forward. This method helps the learners to:

- embed a capacity for "futures thinking" across the organization

- explore specific trends that might have a disruptive impact on the organization, and develop appropriate responses to those disruptions

- explore alternative future scenarios and work from those towards viable innovation strategies to minimize threats and maximize opportunities

- understand the role futures thinking plays in developing an organization's innovation strategy

4. Entrepreneur Laboratory

There has been an explosion of interest in startups and how to engage and enable new ventures. They involve developing novel value propositions and expanding them into robust business models that can realize the potential value for end users. Coupled with powerful new approaches around rapid prototyping of minimum viable products, getting early feedback to refine ideas, and pivoting towards a solution, they provide a fast track to developing and implementing innovation. But such "boot camp" models are not just relevant to startups and high-tech enterprises. They can help existing organizations rethink how they come up with and carry forward business cases. Building on the experience of partner companies such as BMW, Nokia, and Lego, this strand of work will explore in a practical way how to bring the entrepreneurial lab into the mainstream.

Using tools and techniques from the lean startup approach and developing and testing innovation concepts through agile processes such as minimum viable product, this method provides learners with:

- exposure to tools and techniques to help them develop ideas via a series of "controlled experiments" that explore and test hypotheses about markets, technologies, etc.

- understanding of the role that prototyping, fast intelligent failure, and other agile approaches play in moving innovation proposals forward

- embedded capacity for entrepreneurial thinking and behaviour across the organization

- a startup frame of thinking for larger established organizations

- traction on novel projects and the opportunity to explore, refine, and progress them rapidly

5. Innovation Theatre

"All the world's a stage", as Shakespeare pointed out, and one part of that stage is where the drama of innovation is being played out. So there is considerable scope for using not only the metaphor but also some of the tools and techniques from the world of theatre to explore the characters, scripts, and scenery of innovation in different contexts – and to develop new tools and approaches to working with innovation. In particular, we will draw on experience at the University of Southern Denmark, which has worked for years on using theatre-based approaches to improve understanding and performance in real organizations.

Processes of innovation are, to a large extent, happening in the communicative interaction between the involved stakeholders. Engaging people in improvised theatre invites participants to challenge taken-for-granted assumptions and patterns of communicating, which allows emergence of something new. This method:

- immediately provides learners with new ways of interacting with each other

- enables access to a skill set different than the cognitive, judgment-driven discrimination typically honed in the business classroom

- helps practitioners generate creative responses to client demands, facilitate meetings, and offer ideas to superiors

- helps future managers develop important organizationally valued skills

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6. Innovation Games

Play and playfulness are increasingly being recognized as powerful aids to creativity and innovation. Engaging people in playing games can be an effective way of enabling co-innovation and collaboration. The concept of "serious play" reflects this growing interest and this strand of work will explore the different ways in which games and structured play can provide new learning opportunities to develop innovation capabilities. These might range from simple live exercises through to more structured interactions and even online and virtual world gaming. Innovation games can be used in a variety of settings, from simple workshop experiences through to extended structured games.

Through doing, making, and relating to the games, the participants iteratively learn to grasp meaning across boundaries and to create practical, usable knowledge. Games can be used for:

• initiating innovation that involves people with different agendas/perspectives

• challenging repetitive patterns/procedures of practice

• creating a shared experience of social dynamics

• team building when the experience needs to be "graspable"

• providing a group of people with a direction for their mutual collaboration

7. Design Making

"Design thinking" has become one of the hot topics in the innovation field in recent years, reflecting both an approach to solving problems and a wide-ranging toolkit which people can use to embrace design methods. Organizations like IDEO have demonstrated the potential of this model in a variety of public and private sector innovation contexts, and it brings important new perspectives especially around user understanding and prototyping. This strand of work not only seeks to explore the ways in which design thinking can be used in learning how to manage innovation more effectively but also looks at "design making" – the range of approaches which enable user engagement in prototyping and concept testing of various kinds.

Engaging with tangible materials in conversational interaction between people, design making helps employ-ees move beyond abstract talking to concrete acting in iterative processes of developing the thinking and action. For participants, design making as a technique:

• creates a space for collective exploration and exchange of ideas, while giving each participant a say in the process

• supports collaboration, discussion, and reflection

• instigates relevant associations

• cultivates participants' ability to be creative

• creates a dynamic environment that opens up diverse interpretations of the materials, where participants are allowed to share radical/disruptive ideas

8. Project-Based Learning

Innovation is not an academic or theoretical matter – it is the practice of turning ideas into value. And much of what we have learned has come from reflecting on projects – successful or otherwise – and pulling out relevant lessons. This strand of work will look at the ways in which structured reflection can be used to capture learning from live innovation projects, and also how we can design reflection projects to help assess and enhance innovation management capability.

When traditional learning methods fail to transport "how-to" knowledge on innovation and entrepreneurship to practitioners, the project-based learning experience helps implement new methods and tools in innovation management. Project-based learning provides a learning-by-doing approach, which allows practitioners to accumulate first-hand tacit "how-to" knowledge in the areas of innovation and entrepreneurship. Real-life innovation problems of the company are tackled by small teams who are mentored throughout the full innovation/entrepreneurship process. Along their journey, multiple innovation tools and techniques are presented, used, and evaluated. As a requirement, project-based learning should be based on a collaborative or cooperative group approach using long-term and interdisciplinary methodology. The key criteria in project-based learning are authenticity, a driving question, constructive investigations, autonomy, and room for reflection.

Applying this method for teaching innovation, participants learn to tackle real-life problems of the company by drawing from many information sources and

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disciplines. Thus, they build the capacity to successfully conduct innovation projects and also acquire the capacity to explore new innovation methods on their own. Participants gain knowledge and skills by working for an extended period of time investigating and responding to an engaging and complex question, problem, or challenge. They are immersed in an inquiry experience that gets them thinking about and questioning the topic.

Conclusion

The needs and requirements for education are permanently evolving, hence we are exploring needs, resources, and experience on both the supply and demand side and building up a clear understanding of where and how delivery could be improved around innovation and entrepreneurship.

The experience base of the project partners has already given us a rich perspective on the strengths and weaknesses of current education and training provision in the field of innovation and entrepreneurship. In particular, it highlights the need for project and practice-centred modes of working and for novel approaches to delivery, which challenge individuals and develop capacity for action at that level. Our project builds on this, develops and prototype a series of novel approaches to delivery, targeted at developing tacit knowledge and skills in innovation and entrepreneurship.

We are exploring the above-discussed novel modes of teaching. Each method has a respected pedagogical foundation, has been already tested in pilot form as part of TACIT knowledge alliance, and we gained some understanding when partners worked on them individually, before the project was formed. We will report more in the nearest future on the results achieved from this ongoing research.

There are limits to what can be done with conventional approaches to education and training around innovation and entrepreneurship and in particular more needs to be done to develop individual capacity for action through acquiring tacit knowledge. We argue this can be delivered through mechanisms which meet needs for:

- project-based learning, linked to the real challenges participants face in trying to make innovation happen

- recognition that different modes of learning; for many practitioners classroom style theory-based approaches do not work effectively

- experiential learning, offering different ways of closing the learning cycle between theory and practice

- skills-based learning, placing emphasis on what individuals working in organizations can actually do rather than focusing only on structures and processes to enable innovation

- practice-based learning, allowing experimentation and gradual capability development through prototyping

- building understanding of core principles around which individuals can configure solutions to the innovation challenge which work in their particular context

In terms of the wider benefit to enterprises, we recognize that innovation lies at the heart of what they do, from the initial stages of start-up through to the difficulties of building on their original ideas and developing new offerings, improving their processes and opening up new markets. The challenge of establishing a healthy business able to repeat the innovation trick and deliver a steady stream of change depends not on luck but on the ability to understand and enact innovation. Meeting this challenge requires learning and capacity building around entrepreneurship skills, and it requires us to further develop our understanding of how to teach innovation and entrepreneurship effectively such that our teaching enables learners to put the lessons into practice.

Acknowledgements

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Anna Trifilova is a Research Fellow at Exeter Business School in the United Kingdom. She is also a Professor at both Saint Petersburg State University, Russia, and at National Research University Higher School of Economics, Russia. She is a visiting professor at Al-Farabi Kazakh National University, Kazakhstan. Anna is involved with ISPIM as an International Advisory Board member and a Leader of Teaching & Coaching Innovation Special Interest Group. She is a Co-Founder of the Future ofInnovation.org. For the last three years, she has acted as an Executive Director for Europe, with DICAMP project in Tunisia, coordinating it on behalf of University of Leipzig, Germany. For the next three years, she is coordinating EU Knowledge Alliance TACIT project with the University of Exeter being the Applicant.

John Bessant is the Chair in Innovation and Entrepreneurship at the University of Exeter in the United Kingdom and has visiting appointments at the universities of Erlangen-Nuremberg, Queensland University of Technology, and the National University of Ireland. Originally a chemical engineer, John has been active in the field of research and consultancy in technology and innovation management for over 35 years. He was elected as a Fellow of the British Academy of Management in 2003 and as a Fellow of the International Society for Professional Innovation Management in 2016. He has acted as advisor to various national governments and international bodies including the United Nations, The World Bank, and the OECD. He is the author of 30 books and many articles on the topic and has lectured and consulted widely around the world.

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