

## **Innovating innovation management teaching - The state of knowledge**

### *Working Paper / Report*

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#### **Abstract**

This working paper explores the current state of knowledge concerning a challenge in innovation. How do you teach, and learn about it? While many organizations offer courses, we know these often fail to stimulate a step change in student abilities. Learners know they should act, but training does not enable this and whilst they gain considerable 'explicit' knowledge, they fail to gain the 'TACIT' element that helps them to apply it. We suggest this is partly due to the mode of delivery and there is a need for different approaches. In this working paper we report on the current state of knowledge on eight respective approaches to teach innovation. The objective of the overarching project, under which this working paper is being developed, is to combine the efforts of business and university educators to create new learner-centered 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.

#### **Introduction**

There is a plethora of textbooks on innovation & entrepreneurship (I&E) with many universities and consultants offering courses dealing with the subject. Their target is to enable individuals to become entrepreneurs and/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.

This working paper is intended to serve as a scientific basis for the on-going research project TACIT. The objective of this paper is thus to develop a detailed understanding of the concept and practice of I&E teaching & training methods through a comprehensive literature review. It will focus on published experiences (via journals, books, etc.) as well as on 'grey' literature and blogs describing some of the challenges in implementing I&E learning. The review will focus specifically on eight approaches subject of TACIT. An overview depicting the respective body of knowledge towards each teaching method is listed after this introduction.

The goal of TACIT and this paper is however not a criticism of the current provision – indeed several of the I&E teaching applicants 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 I&E 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 – and this is why our project focuses directly on this. 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 (for example the ‘flipped classroom’ and the shift to MOOCs – massive, open online courses) but we are also exploring pedagogies that develop the individual’s ability to face and adapt to the I&E challenge.

In terms of state of the art, or the state of knowledge, 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 not sufficient anymore where problems span cultural and functional boundaries. This holds true also for this literature review itself, wherein we not only consider scientific journals, as usually done, but also ‘grey’ literature and blogs – by that spanning cultural and functional boundaries in I&E teaching.

Our overall question is around the learning challenges which organizations and individuals face in developing understanding and skills for innovation management. 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. 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.

We start our approach from a researcher’s perspective. Thereby we gather the actual body of knowledge concerning the following I&E teaching methods:

- Storytelling
- Peripatetic Learning
- Future-based Learning
- Entrepreneur Laboratory
- Innovation Theatre
- Innovation Games
- Design Making
- Project-based Learning

The ancillary goal of this working paper is to provide a common ground for all members of the TACIT project. EBSCO Host as well as Google Scholar and Google were used as information sources. By reason of the high amount of publications (including ‘grey’ literature and blogs) we only devise the cited sources for each I&E teaching method to subsume respective information on a given set of questions. We are conscious that a thorough literature review on each of the I&E teaching methods would suffice a distinctly broader number of sources – due to the number of methods and the ancillary nature of this working paper’s goal, we nonetheless believe to provide a solid base for forthcoming, more focused, publications throughout the lifetime of the TACIT project.

## ***Storytelling***

Developing a coherent innovation narrative linked to suitable boundary objects such as the Business Model Canvas, Lego Serious Play and other platforms

### **1. Method**

- Storytelling is an excellent tool for designing systems
- 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 places emphasis on the need to develop a compelling narrative which can unfold as the innovation develops
- developing a coherent innovation narrative linked to suitable boundary objects such as the Business Model Canvas, Lego Serious Play and other platforms
- The use of stories delivers the material on several different levels. It provides an intellectual component that delivers concrete, quantifiable information.

It also provides emotionally charged information that challenges students from a psychosocial-cultural perspective.

### **2. Requirements**

- You may use suitable boundary objects such as the Business Model Canvas, Lego Serious Play

### **3. Potential solution/outcome**

- The use of storytelling can engage students in reflective thinking, writing, and learning activities
- Stories can be developed through a variety of approaches and this strand of the work will explore and test a variety of these

### **4. When should you use it?**

- Storytelling as a communication tool
- Branding through storytelling

### **5. Main Sources**

- Davidson (2004) A phenomenological evaluation: using storytelling as a teaching method
- Hermansson et al. (2008) How does a company communicate
- Koenig (2002) Using storytelling as an approach to teaching and learning with diverse students

### ***Innovation in the Wilds (aka Peripatetic Learning)***

Deep or long-term learning occurs when individuals are taken outside of the context of application and where experiential and compelling stories link the landscape and the learner to create knowledge scaffolds (virtual access structures to reach points of complex learning) which in turn brings about tacit knowledge (in part defined by the 'ability to act' as an outcome).

#### **1. Method**

- The course combines classroom-based learning, with compelling experiential learning in the wilds whilst visiting and exploring locations rich with industrial heritage and by hearing of the innovation challenges faced by the visionaries and innovators of the past.
- The course also utilizes structured reflection and simplistic, but vibrant case studies to bring the learners up to date on the innovations they have experienced.

#### **2. Requirements**

- Each learner will experience examples of industrial heritage, but in remote and inaccessible location (for modern vehicles) – they must therefore be mobile and reasonably fit and healthy and provide suitable clothing and footwear.
- Access to the learning space is seasonal – the most enjoyable experiences will take place in the Spring, Summer or Early Autumn. Learners will be challenged by the ruggedness of the location, inspired by the countryside **but must not be** deterred by the weather or terrain underfoot.

#### **3. Potential solution/outcome**

- Provide an understanding of a number of key innovation theories, brought to life by viewing them using real, but historic example, e.g. in an industrial/natural heritage environment
- Consider the modes of transferring knowledge and creating deep learning using a case-based learning technique but that is presented in an unfamiliar learning environment (i.e. not in the classroom or company premises boardroom) to create a rewarding and a novel
- Learners will be confident in developing scenarios and examples where they can focus on taking their cohort on a learning journey, using experiences and locations to build tacit knowledge and engender in their students and ability to act, on the requisite challenges they each face in their workplaces.
- Learners will understand the role that knowledge, knowledge transfer, internalization and adoption play in enabling individuals to access new skills and change their perceptions.

#### 4. When should you use it?

- To provide grounding and practicality to the fundamental theories of innovation.
- To convince learners of the challenges they face but importantly demonstrate the potential that exists to solve them.
- To create and strengthen project teams, linked by common experiences, who can then face challenges collectively.
- To break the cultural norms around in-company or education.

#### 5. Main Sources

- Klein (2012) The peripatetic learner-the role of mobility in the formation collaborative learning spaces
- Wikipedia (Link: [https://en.wikipedia.org/wiki/Peripatetic\\_school](https://en.wikipedia.org/wiki/Peripatetic_school))
- Benedek (2014) Mind the Gap\_Between standards and practice of mobile learning experience design

## ***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 'IF-Lab' (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.

### **1. Methods**

- Learning through simulation, scenario development, road mapping, back casting and other techniques

### **2. Requirements**

- This is a team-based approach using workshop techniques to develop and explore alternative futures and identify strategic innovation responses to emerging challenges

### **3. Potential solution/outcome**

- learners will be exposed to tools and techniques to help them explore alternative future scenarios and work from those towards viable innovation strategies to minimize threats and maximize opportunities
- learners will acquire facility in using a range of futures methodologies
- learners will understand the role futures thinking plays in developing an organization's innovation strategy

### **4. When should you use it?**

- To help embed a capacity for futures thinking across the organization
- To explore specific trends which might have a disruptive impact on the organization and develop appropriate responses.

### **5. Main Sources**

- Savery (2015) Overview of problem-based learning: Definitions and distinctions
- Dolmans et al (2005) Problem-based learning: Future challenges for educational practice and research



## ***Entrepreneur laboratory***

There's been an explosion of interest in start-ups and how to engage and enable new ventures. They involve developing novel value propositions and expanding them into robust business models which 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 aren't just relevant to start-ups and high tech enterprises. They can help existing organizations rethink how they come up with and carry forward business cases. Building on experience in companies like 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 lean start-up and developing / testing innovation concepts through agile processes such as minimum viable product

### **1. Method**

- Drawing on techniques from the world of agile/lean start-up the approach will practice a series of 'build-test-learn' cycles to take innovation ideas forward.

### **2. Requirements**

- The workshops will involve team-based approaches ideally working on novel concept ideas originated by participants or brought to the workshop

### **3. Potential solution/outcome**

- learners will be exposed to tools and techniques to help them develop ideas via a series of 'controlled experiments' which explore and test hypotheses about markets, technologies, etc.
- learners will acquire facility in using prototyping methods such as minimum viable product
- learners will understand the role that prototyping, fast intelligent failure and other agile approaches play in moving innovation proposals forward

### **4. When should you use it?**

- To help embed a capacity for entrepreneurial thinking and behaviour across the organization
- To bring a 'start-up frame of thinking to larger established organizations
- To gain traction on novel projects and explore , refine and progress them rapidly.

### **5. Main Sources**

- Levitt et al (2008) Field experiments in economics
- Rowley (2000) From learning organisation to knowledge entrepreneur
- Steyn (2004) Harnessing the power of knowledge in higher education

## ***Innovation Theatre***

Drawing on theatre improvisation methods to explore challenges in innovation and to mutually develop new perspectives on the emerging themes.

### **1. Method**

- 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.
- There are a variety of theatre-based methods, whose core lays in the meeting between theatrical representations of burning themes, and the responses from corporate practitioners involving themselves in the unfolding improvised situations.
- The themes brought up reflect what is of importance within the organisation. Playing out such themes opens up for new ways of interacting, which can immediately be tested.

### **2. Requirements**

- Skills of facilitation to allow the most important themes to be at the center of the work

### **3. Potential solution/outcome**

- It immediately provides participants with new ways of interacting with each other.
- Using improvised or innovation theatre enables access to a skill set different than the cognitive, judgment-driven discrimination typically honed in the business classroom.
- Improvisation can help practitioners generate creative responses to client demands, facilitate meetings, and offer ideas to superiors.
- Help future managers develop important organizationally valued skills.

### **4. When should you use it?**

- Using impro to generate experiential learning about key course themes: creativity and leadership.
- Using impro to create an environment conducive to learning: taking risks, creating community, having fun, and getting focused.
- Using impro to stimulate creative, nonlinear idea exchange and co-learning.

### **5. Main Sources**

- Huffaker (2005) Learning in the business classroom - An adventure with improve theater techniques
- Jackson,Vine (2013) Introduction - Learning through theatre
- Moshavi (2001) Impro techniques to management
- Vera et al (2005) Impro and innovation



## ***Innovation Games***

Engaging people in playing games can be an effective way of enabling co-innovation and collaboration. Games provide purpose, are goal-oriented and can facilitate collaboration. Innovation games can be used through a variety of settings from simple workshop experiences through to extended structured games.

### **1. Method**

- Play and playfulness are increasingly recognized as enabling states of mind for creativity and innovation in a short space of time by experiential learning.
- Playfulness enables learning from, with and about each other across cultural, functional and organizational boundaries under conditions of novelty and uncertainty.
- Innovation Games can make participants comprehend co-creation and allow for embracing emerging dynamics among the involved.

### **2. Requirements**

- Picking or developing simple games that are suitable for the relevant group.
- Basic understanding of co-creation principles.

### **3. Potential solution/outcome**

- Through doing, making and relating to the games the participants iteratively learn to grasp meaning across boundaries and to create practical, usable knowledge.
- Gives room for imagination and creativity, and creates a shared experience of social dynamics.
- Could provide participants with a more holistic understanding of complex social challenges of interaction when they jointly need to deal with innovation/new ideas.

### **4. When should you use it?**

- For initiating innovation that involves people with different agendas/perspectives.
- For challenging repetitive patterns/procedures of practice.
- For team building when you need the experience to be graspable.
- For providing a group of people with a direction of their mutual collaboration.

### **5. Main Sources**

- Hohmann (2006) Innovation games: creating breakthrough products through collaborative play
- Miller et al (2008) Innovation games – a new approach to the competitive challenge
- Pieroni et al (2000) Classroom innovation: games to make chemistry more interesting and fun

## ***Design Making***

Engaging with physical artifacts enhance human interaction. In processes of innovation it can be mockups or a variety of tangible materials.

### **1. Method**

- Engaging with tangible materials in conversational interaction between people. Design Making helps employees move beyond abstract talking to concrete acting in iterative processes of developing the thinking and action.
- Creates new spaces for collaboration and enables participants to cut across barriers for innovative thinking.
- A way of bringing something graspable and new into being that is not yet existent; especially that of which lies beyond the point of being fully understood/explained.
- Help facilitate collaboration to frame the activity and provoke insights.
- Visible and tangible standpoints to lead discussions, during which participants can share personal experiences and knowledge.

### **2. Requirements**

- Have access to a variety of tangible materials.
- Skills of facilitation.

### **3. Potential solution/outcome**

- 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.
- Creates a dynamic environment that opens up for diverse interpretations of the materials, and where participants are allowed to share radical/disruptive ideas.

### **4. When should you use it?**

- You can design the way you lead, manage, create and innovate.
- Design Making for business innovation.
- When you need to create common ground for discussion and idea generation.
- Cultivate participants' ability to be creative.

### **5. Main Sources**

- Brown (2010) Design thinking
- Brown, Wyatt (2010) Design thinking for social innovation
- Heather (2006) Turning design thinking into design doing
- Leavy (2010) Design thinking - a new mental model

## ***Project-based learning***

Using live innovation challenges as a device to integrate key tools and concepts around innovation and entrepreneurship.

### **1. Method**

- 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.
- 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.
- The key criteria in project-based learning are authenticity, a driving question, constructive investigations, autonomy, and room for reflection.

### **2. Requirements**

- Project-based learning should be based on collaborative or cooperative group learning on a long-term and interdisciplinary basis
- Technology can play an important role in structuring and supporting effective project-based learning, as it makes the environment more authentic to participants.

### **3. Potential solution/outcome**

- Participants learn to tackle real-life problems of the company by drawing from many information sources and disciplines. Thus they build the capacity to successfully conduct innovation projects and also acquire the capacity to explore new innovation methods on their own.

### **4. When should you use it?**

- 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.

### **5. Main Sources**

- Thomas (2000) Review of research on project-based learning
- Larmer, Mergendoller (2014) 8 essentials for project-based learning
- Harmer (2014) Literature review - project-based learning
- Gann, Salter (2000) Innovation in project-based learning
- Bakk (2013) Project-based learning
- Lasauskiene (2015) Project-based learning at university: Teaching experiences of lecturers

## Conclusions and next steps

The needs and requirements for education are permanently evolving, hence we need this comprehensive literature review to build a common ground among our project partners. The first part of our project focuses on 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. This is thus only a first step towards our overall goal.

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-centered 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.

In terms of the wider benefit to enterprises across Europe, 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. This requires learning and capacity building around Entrepreneurship skills.