CORPORATE ENTREPRENEURSHIP EDUCATION: INDIVIDUAL AND ORGANIZATIONAL ENTREPRENEURIAL LEARNING

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ABSTRACT

Corporate entrepreneurship education is an important prerequisite for innovation and management of sustainable growth in global business environments. In highly uncertain environments creating new opportunities and pursuing entrepreneurial initiatives in established and new business requires an integrated view of corporate entrepreneurship and corporate entrepreneurship education. This paper explores a multilevel framework for corporate entrepreneurship education based on the theoretical constructs of a vital entrepreneurial learning organization (VELO) and a role model for the personality of the ambidextrous corporate entrepreneur (PACE) mainly via an exploratory research approach with elements of action research also rooted in a type of Design Science Research approach. It details the implications for, and gives direction to researchers and practitioners involved in the design of holistic corporate entrepreneurship programs in dynamic and complex business environments.

Key words: Entrepreneurship education, Entrepreneurial and managerial mindset, Multi-level approach, Entrepreneurial learning and change management, Modular concept

INTRODUCTION: TOWARD A MULTI-LEVEL PERSPECTIVE OF ENTREPRENEURIAL LEARNING

As stated by Neck and Greene (2011) entrepreneurship and entrepreneurship education have more relevance today than ever before. Entrepreneurial firms and entrepreneurial agents are a driving force for innovation, renewal and development in today’s globally competitive technology business environment (Kuratko 2005, Baumol et al 2007). A viable interaction of the organization with the external environment involves identifying, selecting and pursuing opportunities in established and new business (Platzek et al. 2011). Entrepreneurial firms therefore require a corporate entrepreneurial mindset (systems perspective, firm level), entrepreneurial teams (interdisciplinary perspective, team level), and corporate entrepreneurs (behavioral perspective, individual level) with entrepreneurial motivation and skills (Schumpeter 2006, Morris et al. 2013) that can be learned (Drucker, 1985, Wunderer 2001, Kuratko 2005, Morris et al. 2008). In keeping with Morris and Hills (1992) future personnel at all levels (Top-level managers, Middle-level managers, First-level managers or Non-managerial personnel) will have to become more entrepreneurial. According to Griffiths et al. (2012) there is currently little progress in entrepreneurship theory and education for
multilevel approaches and a general lack of formal academic programs (Kuratko 2005, Griffiths 2012).

In this research paper we present a founded general, multi-level framework for corporate entrepreneurship education. Our findings will have significant implications for researchers and corporate managers involved in the design of holistic corporate entrepreneurship programs in international and complex business environments. Which learning fields in corporate entrepreneurship education can be defined from a multi-level perspective? How can personal experience in the day-to-day running of a business or in the creating of new business be integrated in a corporate entrepreneurship program (learning from first-hand experience)? How can previous learning and failures of others be integrated in corporate entrepreneurship education (second-order experiential learning)? How can reflection on individual and organizational entrepreneurial practice be transformed in an educational program?

The theoretical analysis and theory-based exploration research method used inter alia in this research (Bortz and Döring 1995) leads to building blocks (modules) for a general, holistic corporate entrepreneurship program with integrated learning elements for individual and organizational learning (Argyris 1999). On the one hand, the research focus is on corporate entrepreneurship content:the application of theoretical constructs for corporate and individual entrepreneurial mindsets (Platzek et al. 2013, Platzek et al. 2014). On the other hand, the emphasis is on the methods used to teach corporate entrepreneurship (Ojastu et al. 2011). As a result of the exploratory theoretical literature research, the paper highlights the importance of (1) work-based learning (Raelin 2008), (2) integrated learning where learning takes place in a network (on the job and off the job) and (3) reflection and experiential learning. All three are essential for the entrepreneurial learning process (Gordon et al. 2012).

According to Raelin (1993) it’s essential to blend theory and practice in corporate entrepreneurship education. This can in some sense also be related to the action research and Design Science research approach. On-the job learning that views the real world as an appropriate location for learning and classroom-based learning that introduces principles that can be applied to entrepreneurial contexts enhance each other. Consistent with Cope (2005) dynamic entrepreneurial learning can take part in two stages: firstly prior to entrepreneurial activities to support the entrepreneurial preparedness and secondly during the entrepreneurial events to accumulate knowledge to act in entrepreneurial ways. In line with Raelin (2007) it is also valuable to form theory-practice linkages: Entrepreneurship theory helps to see entrepreneurial practice in a new light and entrepreneurial practice supports the integration of new information into the knowledge base. Diverse accumulations of knowledge, experience and learning within the process of opportunity identification and exploitation create new insights and new knowledge to recognize innovative opportunities (Corbett 2005). In keeping with Raelin (1997) corporate entrepreneurship and entrepreneurial learning should respect different modes of learning (experience, observation, conceptualization, experimentation) at the individual level and foster the learning together with others. Along with Nonaka (1994) individuals, groups, and organizations have to create and exploit information and knowledge as communities of interaction. Therefore, a multi-level approach on entrepreneurial learning in theory and practice (fig. 1) used in this research helps us understand the nature of holistic corporate entrepreneurship in dynamic environments and to build knowledge and competences for ongoing entrepreneurial action. This again reminds of the Design science and Action based research approach. Consequently, corporate
entrepreneurship education should follow a multi-level perspective and combine individual, team and organizational learning.

**Figure.1: Multi-level perspective on entrepreneurial learning in entrepreneurial context: Focus on corporate entrepreneurship theory and practice**

ENTREPRENEURIAL LEARNING AND ADAPTATION THROUGHOUT THE LIFE OF A COMPANY

The dynamic that drives innovation and management for sustainable growth in today’s environment is entrepreneurship. Corporate entrepreneurs and entrepreneurial teams create and implement new ideas proactively with a commitment to the mission and life of the enterprise (Drucker 19985). They shape evolution and revolution (fig. 2) as the organization grows (Greiner 1998) to reach the dynamic end state of a vital entrepreneurial learning organization in permanent exchange with the external environment (Platzek et al. 2014). To develop, manage and grow the business, individual and collective entrepreneurial learning from entrepreneurial practice is vital (Cope 2005).
Consistent with Plaschka and Welsch (1990) the various career paths and roles played by corporate entrepreneurs, the different stages of the organizational life cycle (fig.2), and the different natures of business environments call for a diversified entrepreneurship education towards an entrepreneurial organization in symbiosis with the external environment (Sathe 2003). In keeping with Hedberg (1981) organizational learning needs to balance learning and unlearning in line with the characteristics of the external business environment. We can therefore distinguish adjustment-learning in stable environments from turnover-learning, and turnaround-learning in dynamic and complex environments. Further, off-the-job learning, on-the-job learning, near-the-job learning, and parallel-to-the-job learning can be combined (Wunderer 2006). It would, however, be valuable to develop an adaptable theory based concept for content (what should be taught) and learning mechanisms (how should it be taught) to meet the evolving needs of organizations, managers, and employees (Kuratko, 2005, Vanevenhoven 2013).

The theoretical building blocks of the vital entrepreneurial learning organization (Platzek et al. 2014) and the role model of the personality of the ambidextrous corporate entrepreneur in the vital entrepreneurial learning organization (Platzek et al. 2013) can be used as a theoretical frame of reference to develop a holistic learning concept for corporate entrepreneurship education. This theory-based approach helps to identify the individual and collective entrepreneurial preparedness (Cope 2005) and to define the content (Béchard and Grégoire 2005) for entrepreneurial learning in different stages of the organizational life-cycle. Following this approach, we can derive the content of corporate entrepreneurship education based on solid conceptual building blocks allowing corporate entrepreneurs to understand the nature of entrepreneurial activity (Tracey and Phillips 2007). A common understanding of the entrepreneurial process (fig. 3) and the contribution of each manager and employee with a personality of an ambidextrous corporate entrepreneur forms the base towards understanding, supporting and developing specific roles in line with the mission of the vital entrepreneurial learning organization. In line with Cope (2005), this perspective offers a theory based approach towards creating an entrepreneurial organization staffed with individuals who act as corporate entrepreneurs. As a consequence, corporate entrepreneurs should be dynamic learners who, in practice, integrate understanding, thinking and acting in an entrepreneurial way throughout the entrepreneurial organization.
Figure 3: Entrepreneurial Process in line with Timmons and Spinelli (2007)

In the following section we give an overview of the basic theoretical constructs for holistic corporate entrepreneurship at company-level and individual-level. This helps to explain the nature of holistic corporate entrepreneurship and offers a general direction towards defining the content for corporate entrepreneurship education. We go on to explore general implications from entrepreneurship education literature and integrate these findings with our theory based concept to present a coherent framework for the design of corporate entrepreneurship education in global environments.

THE CONTEXT FOR HOLISTIC CORPORATE ENTREPRENEURSHIP EDUCATION

The generic personality of the ambidextrous corporate entrepreneur: The PACE-Concept

Corporate entrepreneurs with an entrepreneurial mindset create organizations that find and pursue opportunities. They orchestrate the entrepreneurial process, create an appropriate work climate, monitor and control the developing opportunity and manage failure through discovery-driven planning and involvement (McGrath and MacMillan 2000). Organizations are political, and politics will be influential in the success or failure of any entrepreneurial initiative within an organization (Morris et al. 2008). Therefore, political skills are helpful to overcome resistance and to obtain resources for the entrepreneurial initiative (Block and MacMillan 1993). Corporate entrepreneurs are creative in interpreting existing rules, developing alliances, and sharing information with others. Ambidextrous corporate entrepreneurs with a managerial and entrepreneurial perspective perform well in established environments while at the same time search for new activities to create new value (Platzek et al. 2013).

Top-level corporate entrepreneurs (Sathe 2003) take ownership for entrepreneurial initiatives and balance mainstream and new-stream activities. They are build organizational architectures for innovation and entrepreneurship, protect innovation and remove constraints. They also design an environmental analysis and opportunity radar system. Middle-level corporate entrepreneurs (Kuratko et al. 2006) evaluate entrepreneurial initiatives emerging from lower levels and champion entrepreneurial projects to enable other’s entrepreneurial actions. They are also intermediaries who accelerate initiatives from the Top-level. First-level Managers and Non-Managerial Personnel
(Wunderer 2001, Morris et al. 2008) and take on experimenting, adjusting, and conforming roles. They initiate entrepreneurial activities, respond to the implementation challenges in pursuing entrepreneurial initiatives and respect norms, rules, procedures to the pursuit of planned entrepreneurial initiatives coming from higher levels in the organization.

The design of corporate entrepreneurship education should be driven by a theoretical understanding of the personality of the corporate entrepreneur and integrate entrepreneurial learning mechanisms (Gordon 2012). Therefore, we can focus on general manager roles (fig. 4) derived in theoretical exploration (Platzek et al. 2013) to evaluate the current knowledge base and to define the necessary learning content. The corporate entrepreneur shapes entrepreneurial and managerial processes to discover, evaluate and pursue opportunities in new and established business. As a change manager he/she balances evolution and revolution, stability and flexibility, improvements and transformation, individual and collective learning processes with an emphasis to the internal and external environment. He/she executes innovation as a basic function of entrepreneurship and learns from experience of success and failure.

![Figure 4: General manager roles in the vital entrepreneurial learning organization according to Platzek et al. (2013)](image)

The corporate entrepreneur creates ideas in the areas of products, markets, and technologies and matches the idea with strategy, structure, and resources. As an effective manager he/she masters the discipline of execution and results through linking people, strategy and operational processes. He/she balances efficiency (doing things right) and effectiveness (doing the right things) using management tools, self-development, and continues learning (Drucker 1988). The corporate entrepreneur makes the organization, group, and team more than the sum of its parts and combines team roles (Belbin 2010) to enable holistic entrepreneurial action.

As a communication manager the corporate entrepreneur communicates upwards, downwards and horizontally to integrate entrepreneurial activities and processes. He/she develops political tactics (Neuberger 1995) to overcome obstacles and to build influential alliances through listening, dialogue, and informal conversation. He/she masters systems design and systems thinking in
entrepreneurial decision-making to create cooperative structures with symbiotic relationships and networks to achieve adaptation and high performance. The corporate entrepreneur understands the environment-organization system, promotes decentralized entrepreneurial experimentation and self-regulation. As a culture manager he/she understands cultural diversity, clarifies cultural gaps openly, builds cultural synergy, and relates characteristics of the national culture to the business and corporate culture.

The manager roles (fig. 4) represent an evaluation and learning framework we can use to define building blocks for the content of corporate entrepreneurship education at the individual level. To take a multi-level perspective we have in addition to take a company-level perspective to derive further building blocks for the content of entrepreneurial learning. We can therefore focus on the concept of the vital entrepreneurial learning organization (Platzer et al. 2014) in the next section.
The vital entrepreneurial learning organization: The VELO-Concept

Entrepreneurial organizations need an overall level of entrepreneurship (Morris and Sexton 1996) to continually innovate in interaction with a global and dynamic business environment. A corporate entrepreneurial mindset with a dual perspective on exploring new opportunities while exploiting established businesses is therefore essential (March 1991, O’Reilly III and Tushman 2004, Platzek et al. 2010). As described in the previous section, such organizational ambidexterity needs to combine the perspective of the individual corporate entrepreneur with his/her managerial and entrepreneurial mindset (Birkinshaw and Gibson 2004, Platzek et al. 2013) with the ability to bring individual and collective action together.

For an understanding of company-level entrepreneurship and to develop an image of the relevant content for corporate entrepreneurship education from this perspective we can focus on the theoretical building blocks of a vital entrepreneurial learning organization (Platzek et al. 2014). This integrated framework with design elements for holistic corporate entrepreneurship is based on three central tasks for the entrepreneurial organization: (1) entrepreneurial information gathering, (2) shaping the future and (3) shaping the organization. The entrepreneurial collection of meaningful information with four key activities (scanning, monitoring, forecasting, assessment) focuses on four basic dimensions of the business environment (character, diversity, geographical dimension and segments). Individual and collective learning are defined as dynamic components of entrepreneurial information gathering.

The entrepreneurial shaping of the future in a vital entrepreneurial learning organization concerns key competencies for entrepreneurial organizations, innovation areas, systems theory principles for interaction of the organization with the environment, and central entrepreneurial decisions in new and existing business. In entrepreneurial shaping of the organization central levers are entrepreneurial strategy, structure, culture, resources and competencies. The vital entrepreneurial learning organization takes central dualities into consideration: Short and long-term viability, optimisation and renewal, flexibility and operational stability, centralised and decentralised decision structures, interests of the organisation and interests of the individual players. Harmonisation of the interests inside the organization is a fundamental design target for the vital entrepreneurial learning organization.

In implementing the three entrepreneurial tasks through a process model, the vital entrepreneurial learning organization must fulfil as a whole unit the roles of knowledge manager for opportunities and threats, idea finder, idea implementer (innovation manager), entrepreneurial manager in existing businesses and synergy manager. A conceptual framework for the specification and analysis of the business environment can guide entrepreneurial gathering of meaningful information such that future opportunities and threats can be proactively detected. A qualitative systems model can help to understand the interaction of the organization with the environment in existing and new business and to study internal and external impulses for the goal-oriented design of interactions. The role model for the vital entrepreneurial learning organization with some implications from practice (fig. 5) gives an image of the basic entrepreneurial roles an entrepreneurial organization has to act upon as an entity to achieve adaptation, innovation and efficiency.
In the vital entrepreneurial learning organization individual participants, teams and the whole organization are learning for proactive, dynamic and creative adaptation to changes in the global environment, in particular by the realisation of entrepreneurial opportunities and the processing of threats. From a company-level perspective (Pedler et al. 1997), five learning elements can strengthen the development of the vital entrepreneurial learning organization: (1) Management workshop for entrepreneurial shaping of the future by agents of change, (2) analysis of individual entrepreneurial activities by entrepreneurial agents and teams, (3) analysis of entrepreneurial culture by culture agents, (4) analysis of the macro environment by country agents and (5) analysis of the micro environment by industry agents.

The Pace-Concept (Platzek et al. 2013) and the VELO-Concept (Platzek et al. 2014) build a theoretical framework to define the content of holistic corporate entrepreneurship education in today’s turbulent business environment. To develop a general entrepreneurial learning program on these fundamental concepts the next section looks at some relevant learning issues in the context of entrepreneurship. Most educational education theory does not explicitly refer to corporate entrepreneurship. It does, however, make sense to consider and review the existing theory for relevant content and pointers to educational aspects that require further investigation.

**IMPLICATIONS FROM ENTREPRENEURSHIP EDUCATION THEORY**

Barbosa et al. (2008) focus on the developing of analytic and intuitive skills necessary in the entrepreneurial process (Bessant and Tidd 2011, Hisrich and Kearney 2012). Intuition and experiential thinking seems to be especially important in opportunity identification. Reasoning and analytical thinking appear to be particular essential in evaluation and implementation of opportunities.
Through integrated coursework and experiential learning (Honig 2004, Edelman et al. 2008) both types of entrepreneurial perception should be leveraged in the four content areas (1) defining and evaluating the opportunity; (2) defining the business concept and strategy; (3) attracting new resources and alliances; (4) getting involved with implementation and entrepreneurship in action. Designing effective learning opportunities for entrepreneurship (Kuratko 2005) around the entrepreneurial process (Hisrich and Kearney 2012) aims to develop entrepreneurial understanding (e.g. learning to relate previously unrelated things) and risk taking in entrepreneurial action (fig.6).

According to Block and MacMillan (1993) the entrepreneurial organization should learn from experience in product, market, and technology areas to consider three levels of learning effort: (1) the venture manager is asked to write a report about the venturing experience (including a statement of the most important things learned), (2) venture managers and senior management people hold one or more meetings to share experiences and identify internal obstacles that should be removed, (3) a corporate entrepreneur should study the venturing experience by recording information on an ongoing basis throughout the venture (venture log, interviews, report on the history of the venture’s performance and major activities, conclusions, lessons learned).

As stated by Honig (2004) corporate entrepreneurship education should be designed as closely as possible to the business environment. Business planning in dynamic environments consists of a lack of certainty and follows no strictly linear process. Therefore, skills to reevaluate, adapt, and revise activities should be practiced and developed through daily experiences at work resulting in experiential learning (e.g. learn to tolerate risks, learn from failure, learn to navigate a team through unknown territory). Consequently, corporate entrepreneurship education should be designed in modules to allow a contingency-based training. Along the lines of Neck and Greene (2011) the business planning process is an influential learning process and it is identified that business plan competitions and workshops have the potential to enhance education experience in developing entrepreneurial skills and networks (Gordon 2012) through action learning and work-integrated learning in a motivational learning environment (Russell et al. 2008).

<table>
<thead>
<tr>
<th>Character of Business</th>
<th>Product (P)</th>
<th>Market (M)</th>
<th>Technology (T)</th>
</tr>
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<tbody>
<tr>
<td>PM-Venture Business</td>
<td>Lack of expertise low product relatedness</td>
<td>Lack of expertise low market relatedness</td>
<td>Lack of expertise low technology relatedness</td>
</tr>
<tr>
<td>PM-Venture Business</td>
<td>Technology commercialization: New Product, in new markets, using new technology Learning field: product and marketing</td>
<td>Lack of expertise low product relatedness</td>
<td>Knowing well high technology relatedness</td>
</tr>
<tr>
<td>PT-Venture Business</td>
<td>Product development: New product, in existing market, using new technology Learning field: product and technology</td>
<td>Lack of expertise low product relatedness</td>
<td>Knowing well high market relatedness</td>
</tr>
<tr>
<td>PT-Venture Business</td>
<td>Lack of expertise low product relatedness</td>
<td>Knowing well high market relatedness</td>
<td>Lack of expertise low technology relatedness</td>
</tr>
<tr>
<td>MT-Venture Business</td>
<td>Knowing well high product relatedness</td>
<td>Lack of expertise low market relatedness</td>
<td>Lack of expertise low technology relatedness</td>
</tr>
<tr>
<td>MT-Venture Business</td>
<td>Lack of expertise Low-Product-Learning</td>
<td>Knowing well high market relatedness</td>
<td>Knowing well high technology relatedness</td>
</tr>
<tr>
<td>MT-Venture Business</td>
<td>Learning field: product and technology</td>
<td>Learning field: market and technology</td>
<td>Learning field: product</td>
</tr>
<tr>
<td>MT-Venture Business</td>
<td>Product augmentation: New product, in existing market, using known technology Learning field: product</td>
<td>Knowing well high product relatedness</td>
<td>Knowing well high technology relatedness</td>
</tr>
<tr>
<td>M-Venture Business</td>
<td>Market augmentation: Existing products, in new markets, with existing technology Learning field: marketing</td>
<td>Lack of expertise low product relatedness</td>
<td>Knowing well high market relatedness</td>
</tr>
<tr>
<td>M-Venture Business</td>
<td>Knowing well high product relatedness</td>
<td>Lack of expertise New-Market-Learning</td>
<td>Knowing well high technology relatedness</td>
</tr>
<tr>
<td>M-Venture Business</td>
<td>Learning field: marketing</td>
<td>Low of expertise low technology relatedness</td>
<td>Knowing well high technology relatedness</td>
</tr>
<tr>
<td>T-Venture Business</td>
<td>Technology innovation: Knowing product and markets well, using new technology Learning field: technology development</td>
<td>Knowing well high product relatedness</td>
<td>Knowing well high market relatedness</td>
</tr>
<tr>
<td>T-Venture Business</td>
<td>Learning field: optimize processes, cooperation and synergy seeking</td>
<td>Knowing well high market relatedness</td>
<td>Lack of expertise New-Technology-Learning low technology relatedness</td>
</tr>
<tr>
<td>Established Business</td>
<td>Maturing: Existing products, in existing markets, with existing technology Learning field: optimize processes, cooperation and synergy seeking</td>
<td>Knowing well high market relatedness</td>
<td>Knowing well high technology relatedness</td>
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Figure 6: Entrepreneurial initiatives and learning fields consistent with Block and MacMillan (1993)
Seminars and workshops by industry experts can help to build up the necessary knowledge base. The acquisition of knowledge should be a balance of theory and practice (Edelman et al. 2008). This can be achieved through classes and the experimental development of entrepreneurial skills through dialogue and meeting with entrepreneurs and entrepreneurial managers, presentation of business research, field work studies or entrepreneurial project (team) work with entrepreneurship content (e.g. business environment and country analysis), all of which are powerful in corporate entrepreneurship education (Mustar 2009).

Against this background, corporate entrepreneurs see corporate venturing and entrepreneurial action as a laboratory and training field to learn about the process of venturing and to learn from failure. Therefore, corporate entrepreneurs at all levels learn through adopting and implementing new strategies, structures, and processes and they acquire new knowledge by introducing new products, entering new markets or creating new business models (Morris et al. 2008). To form a base for practice-based learning, work-integrated learning, and work-based learning, integrated course-based learning in classroom will make it possible to understand the nature of entrepreneurial activity.

The course work can therefore focus on (1) an introduction to corporate entrepreneurship and basic concepts (e.g. managerial and entrepreneurial mindset, entrepreneurial process and internal corporate venturing, meaning of organizational slack, impact of triggering events, effect of a sense of urgency, learning from failure and the need for unlearning); (2) best practices of corporate entrepreneurship; (3) training in creative thinking; (4) the idea development process and evaluation process; (5) the review of specific climate factors and barriers to entrepreneurial behavior; (6) venture planning.

In line with Lans et al. (2008) corporate entrepreneurship education can focus on learning for corporate entrepreneurship through the development of an (individual and corporate) entrepreneurial mindset and by strengthening entrepreneurial behavior (e.g. recognizing and acting on opportunities) or learning about corporate entrepreneurship through understanding entrepreneurial situations and context (e.g. know-how to write a business plan). To develop entrepreneurial competence (at individual, team, organizational level) the emphasis has to be on competence assessment and identification of knowledge gaps in relation to the specific work and business environment. Thus, a competence assessment can be a strategic starting point for corporate entrepreneurship education at individual and collective level.

According to Morris et al. (2013) a distinct set of competencies are critical for entrepreneurial action and that they should be developed together with general management competencies. To improve individual and organizational performance the managerial and entrepreneurial competencies should be measured against criteria and can be improved by holistic corporate entrepreneurship education. Therefore, we can focus in corporate entrepreneurship training programs on the what (e.g. business and management basics, industry and competitor analysis, customer analysis, market analysis, opportunity identification, risk mitigation, resource leveraging) and the how (e.g. traditional lectures, competency-based feedback on entrepreneurial behavior, influencing personal attitudes through experimentation, learning in entrepreneurial performance) to develop dynamic entrepreneurial competencies.
As stated by Morris et al. (2013) the most relevant competencies are (1) social skills (e.g. communications and interpersonal relations, networking), (2) functional business skills (e.g. marketing and sales, strategic planning, recruiting entrepreneurial talent), (3) general management skills (e.g. goal setting, organizing and motivating people, leadership and delegation, negotiation) and (4) entrepreneurial skills (e.g. creative and holistic thinking, innovation and new product development, entrepreneurial risk management, searching/interpreting/evaluating environmental change, identifying/selecting/pursuing opportunities respectively opportunity refinement/resource leveraging/championing). In consequence, the developing of these competencies (fig.7) takes place in reciprocal interactions between individuals and their environments where the individuals gather feedback and gain expertise to guide their present and/or future entrepreneurial initiatives. The corporate entrepreneur can therefore develop his/her competency knowledge base while resolving complex problems and exploiting an opportunities.

The knowledge base is essential to opportunity identification (Gordon 2012, Volery et al. 2013). De Tienne and Chandler (2004) state that entrepreneurial discoveries can be the result of systematic search but also take place randomly. Corporate Entrepreneurship Education can support opportunity identification but it would be inappropriate to assume that all relevant information required to identify opportunities can be presented in a classroom. Consequently and consistent with Cope (2005) corporate entrepreneurship education should also focus on entrepreneurial learning by doing (practical, routine, adaptive learning through resolving complex and ambiguous situations at work), reflective learning (learning through reflecting entrepreneurial decisions and actions), learning through crisis (stimulated fundamental learning and adaptation through discontinuities and events). Engagement, developing new insights, inward critical self-reflection, mistakes and failure all play an important role in entrepreneurial learning and entrepreneurial awareness education (Gordon 2012, Fretschner and Weber 2013).

<table>
<thead>
<tr>
<th>Competency-based corporate entrepreneurship education: Focus on entrepreneurial competencies</th>
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<tbody>
<tr>
<td>1. Opportunity Recognition</td>
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<td>2. Opportunity Assessment</td>
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<td>3. Risk Management</td>
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<tr>
<td>4. Seeing and Shaping Vision and Future</td>
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<tr>
<td>5. Resilience and goal-directed action when confronting obstacles</td>
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<td>6. Creative Problem Solving</td>
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<td>7. Resource Leveraging and do more with less</td>
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<tr>
<td>8. Value Creation through developing new products, new services, and/or new business models</td>
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<tr>
<td>9. Organization-Environment-fit through adaptation and focus</td>
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<tr>
<td>10. Maintain a sense of Self-Efficacy and Self-Confidence</td>
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<tr>
<td>11. Building and using Networks</td>
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<tr>
<td>12. Integrating interests between individuals and organization, inside and between groups/teams/units</td>
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<tr>
<td>13. Politiicking</td>
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<tr>
<td>14. Understanding (and take advantage of) Cultural Context</td>
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<tr>
<td>15. Understanding (and take advantage of) Institutional Context</td>
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Figure 7: Entrepreneurial Competencies of the Corporate Entrepreneur consistent with Morris et al. (2013)
The accumulation of skills and experience cultivates entrepreneurial preparedness, supports future actions and encourages serendipity, in other words innovations through happy entrepreneurial accidents (Kingdon 2012). According to Pittaway and Thorpe (2012) such action-based learning should include inward, outward, backward and forward reflection and interaction within social communities. Further, an individual’s learning experiences should be integrated in entrepreneurship education. In keeping with Neck and Greene (2011) experience and a portfolio of practice-based trainings like starting businesses and practicing entrepreneurial activities coursework will result in teaching a way of thinking and acting that supports the development of an managerial and entrepreneurial mindset (Platzek et al. 2014) and a capacity to act entrepreneurially (Fretschner and Weber 2013).

Beyond understanding and knowing the foundation principles of corporate entrepreneurship (e.g. opportunity identification and analysis, feasibility analysis, business planning, resource assembling, assessment and management of risk, performing management roles, evaluation of results) learning fields for entrepreneurial application are e.g. dealing with complexity and uncertainty, creativity and innovation, multi-dimensional problem solving and entrepreneurial decision-making, multi-functional roles and empathy, business design, entrepreneurial culture, social responsibility, and leveraging failure (Plaschka and Wells 1990, Neck and Greene 2011).

Following this, understanding, doing, learning, and reflection on entrepreneurial thinking and acting with a holistic perspective (Wunderer 2006) is therefore a fitting method for strengthening a vital entrepreneurial learning organization in an unpredictable business environment. A practice-based corporate entrepreneurship education should, as a consequence, integrate reflecting-on-practice and reflecting-in-practice elements embedded in a continuous cycle of entrepreneurial action, learning, testing, and experimenting. Senge (2006:186-187) formulates guidelines (fig.8) for balancing inquiry and advocacy in reflective practice as an imperative for collaborative learning, opportunity recognition, and to put business ideas into practice. Dialogue, discussions and structured self-reflection should be part of the entrepreneurial learning process (Ojastu et al. 2011).

<table>
<thead>
<tr>
<th>Balancing inquiry and advocacy: Surfacing, testing, and improving mental models (how the world works)</th>
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<tbody>
<tr>
<td><strong>1. When advocating your view, make your own reasoning explicit</strong></td>
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<tr>
<td><strong>2. When advocating your view, encourage others to explore your view</strong></td>
</tr>
<tr>
<td><strong>3. When advocating your view, encourage others to provide different views</strong></td>
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<tr>
<td><strong>4. When advocating your view, actively inquire into others' views that differ from your own</strong></td>
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<tr>
<td><strong>5. When inquiring into other's view, if you are making assumptions about other's views, state your assumptions clearly</strong></td>
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<tr>
<td><strong>6. When inquiring into other's view, state the data upon which your assumptions are based</strong></td>
</tr>
<tr>
<td><strong>7. When inquiring into other's view, don't bother asking questions if you're not genuinely interested in the response</strong></td>
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<tr>
<td><strong>8. When others no longer appear to be open, ask what logic might change their views</strong></td>
</tr>
<tr>
<td><strong>9. When others no longer appear to be open, ask if there is any joint way that might provide new information</strong></td>
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<tr>
<td><strong>10. When you or others are hesitant to explore alternative ideas, discover what is making open exchange difficult</strong></td>
</tr>
<tr>
<td><strong>11. When you or others are hesitant to explore alternative ideas, design ways of overcoming these barriers</strong></td>
</tr>
<tr>
<td><strong>12. Use these guidelines to keep in mind the spirit of balancing inquiry and advocacy and to consider mental models</strong></td>
</tr>
<tr>
<td><strong>13. Use these guidelines to challenge your assumptions and worldviews and to improve your mental models</strong></td>
</tr>
<tr>
<td><strong>14. Use the shared understanding of interrelationships and patterns of change for entrepreneurial decision making</strong></td>
</tr>
<tr>
<td><strong>15. Manage mental models to overcome the conflict with internal worldviews to put the best ideas into practice</strong></td>
</tr>
</tbody>
</table>

**Figure 8: Balancing inquiry and advocacy: Skills for effective collaborative learning according to Senge (2006)**
In the next section we look at the implications from entrepreneurship education theory and the theoretical concepts of the vital entrepreneurial learning organization (VELO) and the personality of the ambidextrous corporate entrepreneur (PACE) and present a corresponding modular concept for holistic entrepreneurial learning.

**A MODULAR CONCEPT FOR HOLISTIC CORPORATE ENTREPRENEURSHIP EDUCATION**

**Classroom-based learning: Understanding context and roles from a multi-level perspective**

Module 1 provides a basic understanding of corporate entrepreneurship. The content focus areas for module 1 are e. g. multi-level perspectives and forms of corporate entrepreneurship, entrepreneurial orientation and intensity, opportunity analysis and entrepreneurial process, strategic renewal and organizational design elements for holistic corporate entrepreneurship, developing a business plan and business model innovation. These form a knowledge base for a better understanding of the international business environment as a playing field for opportunities and risks (module 2).

The character and elements of the business environment are the focus of module 2. An understanding of the general macro environment (political and legal, economic and social, natural and technological environments) and the micro environment (industry, competitors, and markets) are prerequisites for understanding the interaction between the organization and its environment (module 3).

Content areas for module 3 are e. g. systems perspectives and systems thinking in entrepreneurial management, dealing with complexity, understanding formal, informal, and political sub-systems, system planning and recursive structures of organizations.

Module 4 looks at the building blocks of the vital entrepreneurial learning organization (design elements of holistic corporate entrepreneurship, entrepreneurial tasks and process model, role model, framework of the business environment, qualitative systems model, learning elements to develop and strengthen the vital entrepreneurial learning organisation).

Complementary to the organization perspective in module 4, module 5 considers the personality of the ambidextrous corporate entrepreneur (e. g. behavioural aspects, managerial and entrepreneurial mind set, entrepreneurial leadership, entrepreneurial preparedness, entrepreneurial networking and relationship management in alliances and cooperation, entrepreneurial activity and management-level, general manager roles of the corporate entrepreneur). For collaboration and collective action it is necessary to channel individual action of the corporate entrepreneurs (Baghai and Quigley 2011).

To illuminate the general expectations of entrepreneurial managers, modules 6 to 12 reflect on the theory behind the manager roles: culture manager, change manager, innovation manager, effective manager, team manager, communication manager, and complexity manager.

**Reflecting on practice: Action-based entrepreneurial learning elements**

Building upon the entrepreneurship education theory, reflecting on practice makes a significant contribution in developing analytic and intuitive skills for entrepreneurial action. Modules 13 to 18 can focus on individual study and experience (individual action) followed by presentations and discussions (group reflection). In module 13 the corporate entrepreneur analyses the general macro
environment of a country systematically to identify and evaluate opportunities and risks. In module 14 the additional intercultural issues regarding international markets are examined.

Analysing a specific micro environment is the focus of module 15. Corporate entrepreneurs should identify the industry characteristics, success factors, trends, competitors, opportunities and threats.

In module 16 the internal study reflects on the specific role of the corporate entrepreneur for the whole organization. The overall organizational architecture is considered (strategy, structure, culture, competences and resources) to understand and evaluate the organization-environment-fit.

In module 17 corporate entrepreneurs take a backward perspective, write a venture log, and take conclusions from past experience to use in future entrepreneurial activities (e.g. venture story, lessons learned). In module 18 corporate entrepreneurs take a forward perspective, reflect on future entrepreneurial action and write a business plan.

Group reflection on entrepreneurial practice from the perspective of the vital entrepreneurial organization takes place in a workshop for entrepreneurial shaping of the future (module 19). Entrepreneurial teams reflect on the practice of opportunity recognition, idea generation and evaluation, synergy creation and building parallel interests (Mac Donald 2008). Reflection on practice from the perspective of the individual corporate entrepreneur (e.g. performance in manager roles, progress in individual action plans, lessons learned to strengthening entrepreneurial preparedness) is the focus of module 20.

**Reflecting in practice: Entrepreneurial work-based learning**

Entrepreneurial learning also takes place in managerial and entrepreneurial field work. Entrepreneurial action is a rich training field to learn about the entrepreneurship process and the implementation of opportunities. At the individual level, the corporate entrepreneur can reflect in entrepreneurial action on the manager roles. He/she can write a personal venture log and a personal competency log to turn theory into practice. Entrepreneurial learning can also take place through practice communities and supported by coaching by instructors, responding just in time to the needs and preferences of the corporate entrepreneur (Raelin 2008). In addition to personal action plans, organizational action plans can be developed and discussed in collaborative learning. Group reflection in practice can be systematically channeled in workshops with focus on organizational learning (module 19) or individual and team learning (module 20).

**Learning mechanisms: Theory-based and practice-based pedagogies**

In combining action and reflection in practice, reflection on practice and class-room based learning we can design holistic corporate entrepreneurship education (fig. 9). Specific programs can be derived based on this multi-level perspective together with the entrepreneurial preparedness of the organization and the individual corporate entrepreneur.
Figure 9: Holistic Corporate Entrepreneurship education: Integrating class-room based learning and work-based learning

Following the implications from entrepreneurship education a portfolio of theory-based (e.g. lectures, seminars, workshops, exercises, presentations, simulations, literature studies) and practice-based pedagogies (e.g. business planning, projects, experiments, reports, venture logs, competency logs, communities of practice, meetings, networks, discussions, coaching, competency-based feedback, learning from success and failure in entrepreneurial action, learning from crises and happy entrepreneurial accidents, interviews, document studies) should be used in entrepreneurial learning.

CONCLUSION

This paper extends the work on holistic corporate entrepreneurship (Platzek et al. 2013, Platzek et al. 2014) by introducing a concept for a holistic corporate entrepreneurship education. We argued that today’s dynamic business environment makes a multi-level approach with individual, team and organizational learning valuable. Further, the entrepreneurial preparedness of organizations and individuals should additionally be considered in the design of specific corporate entrepreneurship education. Consequently, we made reference to the concept of the organizational life-cycle and the dynamic end state of a vital entrepreneurial learning organization. We also looked to the concept of the personality of the ambidextrous corporate entrepreneur in the vital entrepreneurial learning organization to derive the basic content for entrepreneurial learning. Following review of existing entrepreneurship education literature we explored implications for integrated theory-based and practice-based pedagogies to achieve a holistic entrepreneurial learning.
Our theoretical and conceptual exploration led to the development of a generic entrepreneurial learning program with twelve class-room based modules and eight practice-based modules. Two of the practice-based modules represent extensive entrepreneurial learning in practice. Further conceptual and business research can help to specify the modules and trainings in more detail and for application in any specific organizational context.

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