E-learning for Cultivating Entrepreneur Skills in Business Engineering

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Abstract

Business engineering educates entrepreneur abilities by traditional teaching and virtual learning. Inter-disciplinary e-skills influence employability and further careers. Contemporary multi-disciplinary organizations include economists, engineers, lawyers, marketers and scientists, who capitalise formal and informal learning, so entrepreneurship is no longer mere innate talent, but a perfectible set of skills facilitating business survival and prosperity on a global market. E-learning thus enhances social inclusion by education in our modern knowledge society, where enterprise e-skills are keys for wider engagements: strategic thinking and planning, effective communication, and networking capacities which support the transition from academia to business.

Keywords
E-learning; entrepreneur skills; business engineering; employability; interdisciplinary e-skills; global markets; education in the knowledge society.
I. The importance of enterprise skills

Entrepreneurship is the inspirational drive of the 21st century, making a great contribution to people’s wellbeing and to the wealth of the economy. Persistence and creativity of notable entrepreneurs have proved that entrepreneurship is not necessarily an innate aptitude, but a generated one, wrought out through life experiences. Nurturing the entrepreneurial spirit from early ages, and continuing it right through all educational levels is very important in contemporary education1.

Entrepreneurship is a developing process based on lifelong learning. It is infused in classes where it provides the context for learning other basic skills and it motivates students to learn. In the more advanced grades it becomes a separate course.

It is connected with lifelong learning models2 assuming that everyone in the education system should have opportunities to learn and further on perfect such skills throughout their active professional life, hence it targets:

• Instil empathy with entrepreneurial values
• Awareness of entrepreneurial behaviours practised in a range of contexts
• The capacity for strategic thinking and planning
• Clear and effective communication techniques
• Abilities of networking and managing relationships
• Support for those seeking to make the transition from academia to business

Academic as well as researcher entrepreneurs find their work to be a formative experience in their enterprising careers. Some develop a business idea directly based on their academic work or research; others will use their experience as an opportunity to make contacts and secure funding needed to undertake further proof of concept work.

II. Benefits to students

The benefits enhancing students’ progress include the following wide range of areas:

• Increased attendance
• Higher academic achievement: Standardized Tests, Pre and Post Tests, Portfolio
• Awareness of career and entrepreneurial options
• Define entrepreneurs’ contribution to society
• Use opportunity recognition/ problem solving skills
• Explore ethics issues and engage in ethical business practices
• Consider steps in business start-up
• Experience entrepreneurship across the curriculum
• Increased self-esteem and respect
• Increased number of students identifying entrepreneurship as a career choice
• Heightened awareness of the role of entrepreneurs
• Encourage risk-taking and learning from failure
• Learn to identify and recognize opportunities
• Improved economic and financial literacy, as well as workplace literacy
• Understand entrepreneurship process
• Identify legitimate sources of capital
• Become an educated, empowered consumer
• Learn about opportunity cost
• Embrace diversity/ socialization skills
• Demonstrate conflict resolution/ negotiation/ sales-marketing/ persuasion skills
• Learn how to make money by skills and tools enabling the start of students’ own businesses

• Foster and value idea generation
• Write business plans applying economic principles, basic marketing skills, and accounting issues
• Manage risk and human relations
• Determine individual entrepreneurial interests
• Use strategies for idea generation and assessment of ideas feasibility
• Evaluate ownership structures
• Translate problems into opportunities
• Demonstrate skills in business start-up and in maintaining business longevity
• Demonstrate knowledge of business closings versus failure
• Ability to find next level of training/access to resources and services
• Demonstrate business management/operation skills
• Determine impact on unemployment
• Attitude toward entrepreneurship as a means of making a living

Entrepreneurship education positively impacts learners at all levels in wide contexts, so there should be a variety of such education programs, all of which providing important outcomes at various stages of a student's life. Changes in personal and career attitudes become visible, mainly in assessing self-worth, self-control and taking responsibility in life, motivation, self-awareness, self-management, transfer of learning, team-work, problem solving, inter-personal communications, and creativity.

III. Recent pedagogical approaches to teaching entrepreneurship

The trend in best practices in entrepreneurship education is toward experiential and problem-based learning pedagogies, which are student-centred.

The knowledge is created inside the student, and it is different for each individual. Professors do not know all answers and act as facilitators to help students discover knowledge on their own.

Student-centric pedagogies include experiential learning, flipped-classroom, simulations, role-playing and case studies. Knowledge and reality are objective and exist independently from the students, yet they must construct their own cognitive structures to make sense of reality and transform experience into knowledge, expert scripts and heuristics.

Being enterprising is not the same as having the ambition of being self-employed. Rather it is characterized by a particular mix of individuality, creativity, and leadership.

These are key skills increasingly demanded by both employers and research organizations. People are different, but the enterprising ones have in common a number of skills, attributes, and behaviours, such as the ones summarized in the next table:

**Table 1. Skills, attributes, behaviours, based on Gibb, A. (2005): Towards the Entrepreneurial University**

<table>
<thead>
<tr>
<th>Skills</th>
<th>Attributes</th>
<th>Behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>intuitive decision-making (little data)</td>
<td>sense of belief in self</td>
<td>seeks &amp; seizes opportunities</td>
</tr>
<tr>
<td>coping with uncertainty&amp;complexity</td>
<td>strong sense of independence</td>
<td>takes initiative</td>
</tr>
<tr>
<td>building know-how &amp; trust relations</td>
<td>goal and achievement oriented</td>
<td>builds &amp; develops networks</td>
</tr>
<tr>
<td>creative approach to problem solving</td>
<td>personal know-how and trust</td>
<td>assessing and taking risks</td>
</tr>
<tr>
<td>negotiation capacity</td>
<td>commitment to see things through</td>
<td>holistic situation management</td>
</tr>
<tr>
<td>selling and persuasive capacities</td>
<td>ownership over problems/actions</td>
<td>thinking strategically</td>
</tr>
</tbody>
</table>

In addition to having the personal attributes, behaviours and values associated with being enterprising, entrepreneurs need a range of skills to successfully start-up, develop, manage and grow

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their business or organization, but also to be effective change agents within organizations and businesses.

**IV. Entrepreneurial skills checklist**

The core skills for being entrepreneurial (outlined below) are higher level versions of the core skills associated with general employability for graduates. Being entrepreneurial means creating, learning and adapting, then developing the required skills to face entrepreneur situations and contexts. Employers are no longer satisfied with a good degree, basic transferable skills and a little work experience; enterprise skills and commercial awareness are now pre-requisite skill and knowledge sets across all sectors. These are needed as companies strive to be competitive and effective in the face of constant, speedy and unpredictable economic, technological, social and political change. In the chart below a selection of additional suggestions on how to enhance entrepreneurial skills is shown.

**Table 2. Enterprise skills and modalities**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Why needed</th>
<th>Opportunities to develop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and analysis</td>
<td>1. Information on target markets, customers, competitors, suppliers. 2. Sources for financing, advice &amp; expertise 3. Clarify opportunities for change &amp; action.</td>
<td>1. under &amp; post-graduate: coursework, projects, dissertations, research assistantships 2. Part-time and vacation jobs, internships and volunteering.</td>
</tr>
<tr>
<td>Communication</td>
<td>High level communication, oral &amp; written, to inform, sell ideas/products/services, inspire, persuade wide audiences staff, partners, funders, clients, colleagues, stakeholders</td>
<td>Debating, presentations, formal meetings, forums, society committees, public speaking. Writing abstracts, executive summaries, cover letters and presentations with impact.</td>
</tr>
<tr>
<td>Idea generation and creative thinking</td>
<td>1 Evaluate ideas, clarify the needs to meet, estimate time, resources, skills to achieve it 2. Analyze if it generates sufficient value in return for the expenditure of time and resources required.</td>
<td>Identifying new ways to make money for a student society or charity. Developing a proposal for a more efficient way of working during an internship or other work experience.</td>
</tr>
<tr>
<td>Networking</td>
<td>Awareness for the product or service relationships with people who have knowledge, expertise or connections (introduce yourself, make a positive impact and connections).</td>
<td>Recruitment fairs, employer, open days, presentations, and student society events. Build own contact list in volunteering, part-time and vacation jobs, internships, student society or department events.</td>
</tr>
<tr>
<td>Financial literacy</td>
<td>Basic understanding of forecasting, budgeting, balance sheets, cash flows and Profit &amp; Loss statements, as well as the financial consequences of all actions.</td>
<td>Learn by doing: manage own finances with a budget and monthly review of expenditure and income, or take the role of treasurer in a student society.</td>
</tr>
<tr>
<td>Commercial awareness</td>
<td>1. Funders often require a business plan but not in the early stages. 2. Get into the market environment you want to operate, learn from it and adapt by strategically thinking and viewing your enterprise needs. It is not content knowledge; it is commercial instinct development, a skill only learnt by doing.</td>
<td>Through part-time and vacation jobs, internships and volunteering. Be proactive in learning how the business, charity/organization works and the environment in which it has to operate. Think about how things may be done differently and opportunities not yet exploited. Use any opportunity to work directly with clients.</td>
</tr>
<tr>
<td>Leadership</td>
<td>Give vision &amp; direction, inspire others to work with you and enable them to do so.</td>
<td>Opportunities to take on responsibility and to inspire others to do existing things better.</td>
</tr>
<tr>
<td>Negotiation</td>
<td>Negotiate with financiers, funders, suppliers, staff, partners, customers, government agencies.</td>
<td>Practise in daily experience, By agreeing on work division in a study or a project group.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Skill</th>
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<th>Opportunities to develop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>Depends on working alone or with others, on the complex development of product/service and on deadlines. Manage people, scarce resources (human and operational), processes, and time.</td>
<td>Internship, volunteering, part-time jobs. Consciously managing multiple tasks: degree completion, part time work, extracurricular activities. Learn what works and adapt accordingly.</td>
</tr>
</tbody>
</table>

Such skills may be taught as separate courses, or through activities infused in other classes, complying with the following five stages, associated to specific business knowledge and entrepreneurial abilities:

![Graph showing the five stages of teaching entrepreneur skills](image_url)

**Fig. 1. The 5 stages of teaching entrepreneur skills**
(see: The Consortium for Entrepreneurship Education)

**Stage 1 – BASICS**
In primary grades, students must experience various facets of business ownership, economy basics, the career opportunities that result, and the need to master key skills for success in a free market economy. Motivation to learn and a sense of individual opportunity are the special outcomes at this stage of the lifelong learning model.

**Stage 2 – COMPETENCY AWARENESS**
Students use the language of business and see problems from the small business owner’s perspective, which is mostly required in career and technical education. Competencies are taught as stand-alone entrepreneurship classes or as part of other courses (cash flow issues may be used in a math class and sales demonstrations in communication classes).

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Stage 3 – CREATIVE APPLICATIONS
Students explore business ideas and ways to plan them, being encouraged to create a unique idea and carry the decision-making process to a complete business plan. The programs enable students to experience business operation and practise the actual processes.

Stage 4 – START-UP
After adults gain job experience and/or further their education, they still need help in assembling a business idea. Community education on business start-up assistance should be widely available in career and technical programs, in community-based programs developed by colleges and universities.

Stage 5 – GROWTH
A series of continuing seminars and support groups assist the entrepreneur in seeing potential issues and dealing with them in a thorough and timely manner. Continuing education programs at colleges or universities offer seminars and workshops for their business community. They acknowledge that the best economic development plan is to help the community's existing businesses grow and prosper.

V. Entrepreneurship programs meet the needs of diverse groups
Areas in need of economic progress consider developing an entrepreneurial culture a significant long-term strategy for creating jobs and wealth. Individuals who lose or give up their jobs for a wide variety of reasons need to have the option to become self-employed, should the opportunity or need arise. Youth that come from economically disadvantaged backgrounds can be motivated to learn and achieve once they are provided with the understanding that they can indeed accomplish their goals and dreams through entrepreneurship.

Minorities need experiences that enable them to see their own opportunities.

Rural areas that lose their best youth to larger cities can see the importance of creating businesses at home, using the advantages of modern communications and transportation.

Global business opportunities engaged by local entrepreneurial businesses may be the answer to losing local jobs. Creating new jobs is considered more effective than holding onto inefficient old jobs.

Reducing business failure as a result of better education and training of entrepreneurs is an economic benefit to all. Entrepreneurship education at academic levels aims at:

• Promoting the incorporation of entrepreneurship education across all levels of career technical and academic education, via infusion within existing courses and by the further support of separate courses developed in entrepreneurship.
• Encouraging participation of partnerships with business, industry, agency and trade associations, and bringing together diverse groups within the consortium whose interests foster economic development through entrepreneurship education.
• Encouraging teacher education institutions and accrediting groups to incorporate competencies of entrepreneurship into teacher training curricula.
• Modelling research projects to recognize successful ventures into entrepreneurship and developing competencies of entrepreneurship.
• Providing a focal point for the planning, organizing and promoting of entrepreneurship education efforts.
• Attracting members committed to the development and promotion of entrepreneurship education across the nation and the world.
• Positioning as resource group for entrepreneurship education in schools and adult education.

VI. Results of focus group analysis on students’ entrepreneurship abilities in our faculty

Here follows a list of entrepreneurship abilities identified in focus group analysis performed on 289 students in 2014 in the Bucharest University of Agronomic Studies and Veterinary Medicine, Faculty of Management and Economics Engineering – USAMV MIEADR:

- Manage money (elicited by questions like: Do you know where your money goes each month? Do you live off less than you earn? If you can’t manage money, you can’t manage a business).
- Raise money (Can you convince that your business is a good risk?)
- Relieve stress. If you get frustrated and upset by setbacks, you will struggle as an entrepreneur.
- Be productive (everyone has their own way to be productive, capitalizing peak energy times, personal routines, and the productivity tools to create a personal plan for success).
- Make entrepreneur friends. (According to entrepreneur Jim Rohn, ‘you are the average of the five people you spend the most time with.’ Improve your odds of success by finding entrepreneur friends who will be able to understand your struggles and give you much needed insight).
- Identify strengths and weaknesses (assessing these enables good business decisions, new partners to bring on, and better employees to hire).
- Hire effective people (the most important skill of any entrepreneur; with highly professional people in the team new strengths can be accessed, a company culture that people want to be part of can be built).
- Manage employees (learn how to motivate, encourage, and develop staff).
- Train new staff (ensure that they know what to do and not do; it keeps the company moving in the correct direction, increases commitment levels of good employees, and gives grounds to follow up on misconduct).
- Conduct basic digital marketing (both competitors and potential customers are constantly online and if you want your business to grow, digital marketing is the starting point).
- Quality content: blog posts, press releases and articles on authority websites. Insert links to various places on your website to build your brand name by exposure and get traffic to your website.
- Keyword strategy: inserting related keywords into content helps the website emerge in more search results.
- Website optimization: the website is optimized to function at its best to encourage potential clients.
- Social Media: engaging social media posts (pictures, video) attract more traffic to the site.
- Focus on your customers to close a sale. (Make sure all your pitches, products, and services focus on actual customer needs research, and ask questions to enable you to give great customer service).
- Spot new trends: keep up to date on start-ups and technology advances that can disrupt the field.
- Deal with failure (successful people failed many times before winning; failure is a learning step).
- Project a positive business image and create a competitive advantage. Regardless of the definition of success, there are common characteristics shared by successful business people. Most are learnt with practice and by developing a winning attitude, especially if you implement strategic planning.
- Master the art of negotiations.
- Better branding (personal and business).
- Strategy. Analyze the long-term challenges and goals, as well as the competition.
- Be resilient and goal-oriented; be resourceful enough to depend on yourself.
- Invest for the long-term. Entrepreneurs need to plan on a quarterly basis.
- Self-reflection and self-reliance reflect on the past and plan for the future.

Conclusions

The 21st century learning emphasizes academic skills and study abilities, as well as curriculum content. Entrepreneurship education develops the skills to actively face the economic environment nowadays. Information and communications technology skills are acquired as students conduct research, communicate with others, and prepare written and visual presentations of their work.
Thinking, problem-solving, interpersonal, and self-directional skills are inherent. By using the real world of entrepreneurship to apply 21st century skills, students are learning the content and context necessary to adapt to our changing world.

Contemporary education advocates for developing entrepreneurial skills to enhance workplace productivity and career options.

Anyone can be or become an entrepreneur at any time of one's life. Although there is no educational degree requirement to become an entrepreneur, it is helpful to have developed good support skills including communications, interpersonal abilities, economic understanding, digital skills, marketing and management, as well as math/finance skills.

Entrepreneurial ventures are the major source of new jobs in the economy. Young people can build confidence in their abilities to become entrepreneurs in their future as a result of a variety of entrepreneurial activities provided throughout education. Entrepreneurship education activities are a real-life vehicle for developing academic skills, but they also enable employees to be more successful as a result of understanding the operations of a small business.

Workforce development programs enhance the employee skills and knowledge that will make them more effective. Understanding the components of business ownership and acquiring entrepreneurial spirit increases employee productivity, improves customer satisfaction, and moves business forward, assisting local communities in better competing on the world market by building a skilled workforce with life long learning skills and work training.

Entrepreneurs are found in every occupation or career cluster, and entrepreneurship education opportunities are important at all levels of schooling, from experience in elementary school to skill development for existing entrepreneurs.

The definition of entrepreneurship success varies with reaching the goals of the individual, from part-time income to fast-growing corporate structures.

Some experts think of entrepreneurs as people who are willing to take risks that other people are not. Others define them as people who start and build successful businesses.

Entrepreneurship does not necessarily mean starting one’s own business. Many people who do not work for themselves are acknowledged as entrepreneurs within their organizations. One person successfully takes advantage of an opportunity, while another, equally knowledgeable, does not, so entrepreneurs may operate from a different vantage point that might direct their decisions.

Successful entrepreneurs seem to have certain traits in common, grouped into four categories: personal characteristics (optimism, vision, initiative, desire for control, drive and persistence, risk tolerance), interpersonal skills (leadership, motivation, communication skills, active listening, easily establishing personal relationships, negotiation, ethics and integrity), critical and creative thinking skills (problem solving, recognizing opportunities), practical skills (goal setting, planning and organizing, decision making, and venture-specific abilities).

To conclude, entrepreneurs’ mindset is unique and it includes: commitment to the business, hands-on approaches, listening and learning techniques, multitasking, self-motivation, constant search for opportunities to improve, and willingness to take risks; they thrive on uncertainty, and are inherently creative, passionate and positive.

References
