

Quadruple Helix of Entrepreneurship and Management Education

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Abstract

This paper discusses the case of the entrepreneurship programme at the Faculty of Business and Economics at the University of Maribor, where academics, entrepreneurs, and managers have joined forces to develop effective entrepreneurship education and training that stimulates creativity and innovation among students. The underlying philosophy of the programme is twofold. First, education for future entrepreneurs and managers of smaller companies, characterized by the de-specialization of job tasks, resource scarcity, and self-employment, must differ from management education for larger companies, where task specialization can take place. Second, during their studies, students should improve their creativity, develop ability for recognize opportunity, gain confidence, and acquire practical managerial experience. Classroom experience itself is not sufficient for developing students' understanding of the value of innovation and creativity; rather, it should be upgraded through direct experience supported by real-life cases and role models. The discussion introduces the term quadruple helix of entrepreneurship education to stress the importance of four main players in such education: students, professors, entrepreneurs, and the supportive infrastructure of the entrepreneurship ecosystem.

Keywords: *entrepreneurship, education, education management, SME*

JEL classification: L26, N30

Introduction

As developed societies progressively transform from managerial to entrepreneurial economies (Audretsch & Thurik, 2007) creative, entrepreneurial individuals are becoming an increasingly important resource for companies. Small and medium-sized companies form an important part of national economies throughout the world, yet the majority of business and management schools do not really consider them important enough to tailor curricula to meet their needs. The rapidly changing business environment characterized by the enlarged role of small and medium-sized companies, the globalization of business, information intensity, and growing uncertainty has increased the value of human capital engaged in business and made the traditional education of future entrepreneurs and managers

of smaller companies unproductive. New methods for teaching people who are going to work in such an environment should be employed.

Entrepreneurship is a complex and multifaceted phenomenon, and entrepreneurs have many different roles to play. The role of innovator is a crucial one. The notion of an entrepreneur as an innovator has been ascribed to Joseph Alois Schumpeter, who placed the entrepreneur into the core of economic progress. Economic development is a dynamic process in which the entrepreneur is the driving force. Without the entrepreneur, no development exists. Schumpeter's entrepreneur is the agent of change, which he considers to be "that kind of change arising from within the system which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Add successively as many mail coaches as you please, you will never get a railway thereby" (Schumpeter 1951: 64f). Development occurs through the introduction of new combinations of resources. "To produce means to combine materials and forces within our reach. To produce other things or the same things by a different method, means to combine these materials and forces differently" (Schumpeter 1934: 65). The individual who introduces new combinations is an entrepreneur. Schumpeter assigned the role of innovator to the entrepreneur and drew the demarcation line between invention and innovation. His definition of entrepreneur and enterprise is clear: "The carrying out of new combinations we call 'enterprise'; the individuals whose function it is to carry them out, we call 'entrepreneurs'" (Schumpeter 1934: 74).

The definition of enterprise as a carrying out of a new combination stresses the importance of a very specific human property: the ability to think, be creative, and innovate. For an enterprise to exist, an entrepreneur is needed. For an enterprise to grow, prosper, and develop, the entrepreneur must constantly carry out new combinations of resources at his/her disposal. The survival of the enterprise depends on the entrepreneur's ability to innovate. The economic system (and the social system, as well) needs entrepreneurs to carry out new combinations of production factors that will yield new products and services to satisfy consumers' constantly changing needs. Thus, the process of 'creative destruction'—led by entrepreneurs—occurs.

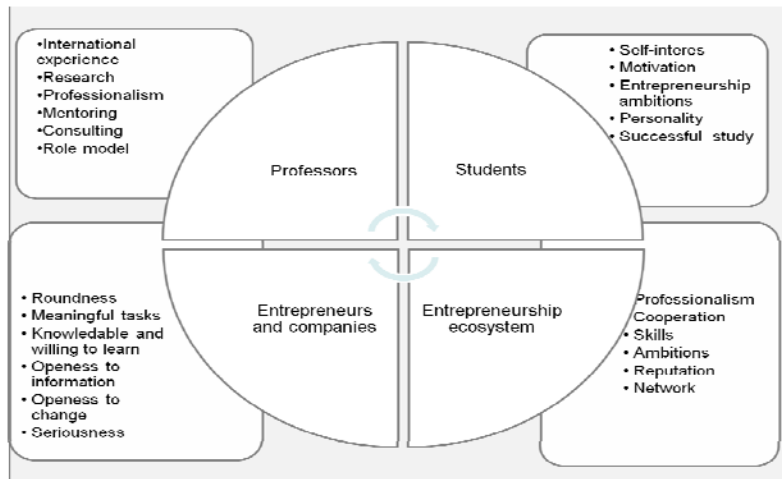
Furthermore, small business is not a miniature version of big business. Individual managing functions in smaller companies cannot be specialized to the same extent as those of large companies. In general, the education process at university institutions still does not take into account such a characteristic, focusing instead on big companies and educating specialists in various fields, such as marketing, finance, and accounting. However, small business cannot afford specialists; it needs highly competent, practically oriented individuals capable of handling a broad array of business problems.

The majority of university programmes continue to train students to be employed by somebody and to work for somebody, failing to train them to be self-reliant owners and entrepreneur, or to be able to take care of their own professional careers. In the majority of business programmes throughout the world, students have

to wait until their graduation and the start of their business career to get firsthand experience in managing a company. What would it look like if other (non-business) schools educated their students in the same manner? Most probably, we would have drivers who had never driven a car, doctors who had never dealt with a patient, architects who had never drawn a blueprint, and painters who had never painted a picture (Rebernik, 2002).

Although students majoring in business and management programmes are supposed to perform many types of jobs, these responsibilities are all tied to thorough knowledge about business and what it really means to run a business. Yet as a rule, students during their studies do not learn much about what real life in companies looks like. Entrepreneurship and SME journals do not lack papers that empirically and/or theoretically deal with problems of entrepreneurship education; rather, they lack practical educational experiments that demonstrate that it is possible to assert innovative ways of teaching entrepreneurship that stimulate creativity and innovation within the current university system.

The working environment in which students of entrepreneurship are going to work is not only the company, but also the whole ecosystem in which small and medium sized companies are searching for opportunities, collecting necessary resources to conduct everyday business. The education must therefore, in a certain creative way, replicate such an environment, thereby following two objectives: building up creative and enterprising individuals and creating effective managers. Paraphrasing the model of the triple helix, we named such education the *quadruple helix of effective entrepreneurship education*. Four main players constitute such education: students, academics, entrepreneurs, and the supportive infrastructure of the entrepreneurship ecosystem (*Figure 1*). The roles of these four players are intertwined and complex. Teaching, studying, researching, and connecting to companies and entrepreneurship ecosystem are all activities that must be performed effectively to build up a successful education of future entrepreneurs and/or managers of small businesses.



How did we start

The underlying philosophy of the innovative entrepreneurship programme described herein is that education and training for people who are to be either independent entrepreneurs or employed in a smaller company, or who are to own and run it, has to be different from the education and training for those to be employed big companies. Such education has to take into account at least three elements that make a small business different: de-specialization of job tasks, resource poverty, and self-employment.

Work on creating a new programme started as early as 1990 and was funded by EU TEMPUS scheme. We followed the model of one of the most successful study programmes of the time for managers of small and medium sized companies in Europe conducted at the University of Gothenburg and the University of Borås in Sweden for more than a decade. The project of transferring knowledge from Sweden to Slovenia was realized through cooperation of our Faculty of Economics and Business with several institutions of higher education—namely, University College of Borås (Sweden), School of Economics and Commercial Law, University of Gothenburg (Sweden), De Vlerick School of Management, University of Gent (Belgium), and Faculty of Economics and Banking, University of Udine (Italy).

The basic aim of the course was to produce graduates who are able to run their own businesses, manage small and medium sized companies, or undertake other managerial jobs immediately after graduation without requiring a lengthy time for getting into the business or getting acquainted with real business life. Graduates should be capable of transferring the acquired theoretical knowledge and skills into practice. In addition to its high academic level, the course should be practically based and oriented towards students' independent work and professional career. Apart from acquiring relevant knowledge and managerial skills, aimed to provide a theoretical foundation as well as practical routine, students' training focused on enabling them to take responsibility for themselves as well as other people. They should be able not only to run the existing companies, but also create new companies, thereby providing new jobs. The programme was designed to allow students to spend four days a week at the university and one day a week in a mentoring company for four semesters. Entrepreneurs and small business managers trained students, and students (with the help of academics) solved real business problems. The programme tried to unite academics and managers on the same task: effective entrepreneurship education and training that matches the changed business environment.

After successfully completing the first year of basic business economics studies, students could apply for admission to the entrepreneurship programme. For each qualified student, an appropriate smaller company was provided according to the pre-set criteria that were capable and willing to cooperate with the Faculty of Business and Economics in entrepreneurship education and training. Under mentorship of the entrepreneur or the top manager of such a company, during their

course of study, students verified their theoretical knowledge in these companies and obtained practical managerial skills.

Companies as Business Laboratories

Students' practical work in companies is a highly important part of the programme. For each student, a smaller company is selected—in principle, with no fewer than 10 and no more than 150 employees. Only companies capable of, willing to, and motivated to cooperate with the university are selected. The company should perform as many different functions (production, accounting, marketing, finance, etc.) as possible as it is important that the student is offered the greatest possible scope of tasks. The company should be "open-minded". In order to perform their tasks in a professional manner, students need access to all kinds of information. They must be treated in the same way as any other reliable employee.

While performing business operations, the company should pay respect to seriousness and its own reputation. It should avoid "moonlighting" and transactions of a dubious value, which bring numerous problems to students with regard to their loyalty and honesty and can reflect on the university as well as on activities aimed to promote business education. The company should not regard the student as a contract-based employee who performs routine tasks. The student must be utilized as a resource to benefit the company. Students, on the other hand, are expected to play an active role and not just be observers. This does not imply that routine tasks are not desired, but that they should not be the dominating activity.

It is important that the company maintains a climate that is open to learning and change. Thus, the student can contribute to increased capabilities and competencies of the company. This is also important in regards to reports made and results achieved by the student. One of the conditions for selecting a mentoring company is that the company must provide the student with motivating feedback about the quality of his/her work.

Relations among the company, student, and university are regulated by the signing of a formal agreement among the Faculty for Economics and Business, the mentoring company, and the student. In order to protect the companies and their business interests, students are obliged to refrain from discussing the company's internal affairs outside the study group of students and teachers involved in the programme. Moreover, it is advantageous if companies cooperating in the programme belong to different branches of industry, trade, and service activities.

The company is not obliged to pay the student any money for his/her work. However, each mentoring company pays a modest fee to the Faculty of Economics and Business. As a counter-value for this contribution, the company gets quality work from a student without undue internal problems, the results of the student's seminary work aimed at solving specific problems within the company, and—through the student—the professional expertise of instructors responsible for individual courses within the programme. Mentoring companies are also entitled to discounted fees of consultancies offered by the faculty and are exempt for paying

participation fees for workshops run by the Institute for Entrepreneurship and Small Business Management, which oversees the entrepreneurship programme.

What our students do in companies is not what is usually considered as a typical student internship. Their experience embodies a whole array of activities occurring in the mentoring company. Not every student faces the same problems because what students have to do in the company is cooperate with employees and cope with the same practical problems employees face. To prevent students from getting too deeply involved and overloaded with practical activities, companies agree to allow students' to spend time preparing their seminar works on company time.

The selection of a mentoring company and a mentor is therefore very important. A company must perform enough activities for students to be involved in, and must face enough problems that need to be solved on a slightly more theoretical basis. The mentor in the company must be capable of assigning student meaningful tasks and of fitting them out with everything they need to perform practical activities and to prepare a seminar work that will suit university standards and solve the company's real problem in a particular area. Because the student stays in the same mentoring company for two years and, simultaneously, has no obligation to be employed in it after graduation, this is not a typical internship experience.

Companies are recruited and retained in three fundamental ways. The first way involves using our database of potential mentoring companies. Entries into the database are based on our evaluation of potential companies, recommendations of colleagues and entrepreneurs with whom we cooperate, companies' goodwill displayed in the media, etc. The second way is to let students find their mentoring company on their own, while the third way involves companies coming to us with a request to be included in the programme. Irrespective of the mode, the same procedure is applied. We gather as much information as needed to determine the adequacy of the company, talk to the entrepreneur, and if needed also visit the company prior to making a decision.

We encourage students to go out into the field and find a company on their own. Sometimes we provide them with a list of good potential companies and let them make their own arrangements. In either case, we provide them with an official letter signed by the chair of Entrepreneurship studies that gives them the authority necessary for discussions with the entrepreneur or lead manager in the company. However, as previously mentioned, we always make the final selection.

On their first visit to company, students take with them an agreement of cooperation to be signed by the student, a representative of the Faculty of Economics and Business, and a representative of the company. The agreement states, among other things, that cooperation can be terminated at any time if any of the parties thinks cooperation is no longer reasonable. Such termination happens very rarely; in 15 years, we have had less than a dozen such cases. By having all three parties sign the agreement, we try to ensure that regulations and relations

among the university, the company, and the student are clear (and in writing) as much as possible, thereby avoiding possible future problems or misunderstandings.

In order to protect the companies and their business interests, students are obliged to refrain from discussing the company's internal affairs outside the study group of students and teachers involved in the programme. A study group should not include companies that compete against one another. If this happens, it is important to let them know of the situation and acquire their mutual acceptance. It is advantageous if companies cooperating in the programme belong to different branches of industry, trade, and service activities.

Entrepreneurship programme professors' "extracurricular" activities

At universities, we are very used to speaking about students' extracurricular activities and drawing conclusions regarding how important they are for students' development. We almost never speak about professors' out-of-class activities, except for sports and Saturday picnics. Teaching is the usual activity that is expected to be performed by professors. At some universities and schools worldwide, this is still the only activity expected. However, at a majority of universities—especially among top ones—researching and consulting activities are becoming increasingly important. The proportion among these three activities depends on the capability of professors and strategic positioning of the university as a teaching or research university.

The Entrepreneurship programme was created and is run by the Institute for Entrepreneurship and Small Business Management. Our strong belief is that the university's main role is to contribute to the development of the region and society. Therefore, we understand that our task is to be involved not only in teaching and researching, but also in many other activities that enable us to qualify as competent entrepreneurship scholars and contributors to economic development. The primary extracurricular activities that are instrumental in developing students' understanding of the value of innovation and creativity are:

- **Global Entrepreneurship Monitor Research (GEM)** is the largest global research project on entrepreneurial activity among the adult population in over 50 countries. Started in 1997, it aims to find determinants that impact national levels of entrepreneurial activity and economic growth. We joined the project in 2002 and are performing the research for Slovenia (e.g., Rebernik, Tominc and Pušnik, 2008).
- **Slovenian Entrepreneurship Observatory** is an annual assessment of entrepreneurial activity of companies in Slovenia and has been run at our Institute since 1998. Like GEM, annual reports are published, and databases created within the project are used for pedagogical purposes (e.g., Širec and Rebernik, 2009)
- Research within **European Network for Social and Economic Research**. We are included in a strong and efficient network of institutes from 32 European countries and participate in joint research

whenever the need to contribute with more detailed insights of Slovenian entrepreneurship arises. (Web: www.ensr.eu)

- **STIQE Conference.** Since 1992, we have organized a bi-annual international scientific conference on Linking Systems Thinking, Innovation, Quality and Entrepreneurship, which seeks holistic answers with multidisciplinary and interdisciplinary approaches (e.g., Mulej, Rebernik and Krošlin, 2006).
- **PODIM Conference.** We co-organize International Conference on Innovation and Entrepreneurship, established in 1978. this conference represents one of the most prestigious innovation and entrepreneurship events in the region, attracting more than 300 entrepreneurs, academics, managers, researchers, experts from entrepreneurship supporting environments, and policymakers. (Web: www.podim.org)
- **Slovenian Start-up of the Year Competition,** established in 2007, aims to build awareness of the importance of innovative high growth potential companies. The prestigious annual award recognizes the efforts of early-stage companies that need informal and formal investors and business partners to create successful businesses. The selection of the Start-up of the Year Company is based upon the evaluation of business plans and presentations to the award committee. (Web: www.startup.si)
- **Business incubator *Tovarna podjemov* (Venture factory)** performs traditional roles of university incubators and provides support to students and researchers seeking to establish their own company. (Web: www.tovarnapodjemov.org)

Students are included in these activities in different ways. They exploit databases and results created in research for their seminar and diploma work, attend conferences, employ tools and information provided by business incubators, visit companies and institutions of entrepreneurship supportive environments, discuss excellent real-life cases of best Slovenian entrepreneurs, etc. We also run a website (www.podjeten.si) and publish our own journal, in which professors and students speak about the entrepreneurship programme and their experiences.

Results and challenges

The very basic desired outcome of the programme is to get students acquainted with the frame of the future jobs they will need to undertake post-graduation and enable them to see the practical value of innovation, creativity, and entrepreneurship. On a general level, all companies perform similar generic functions and follow similar missions; therefore, for the learning to occur, it is not significant what a particular company does, where it is located, or other such concerns. For students to gain similar experiences, they do not need to be placed in the same company. Each student obtains his or her experience from different

companies, contributing different as well as similar experiences to the class discussions. Individual experience is enriched in a collective experience. Students definitely learn what real life is like in a company. We also believe that seeing entrepreneurs and professors at work as well as networking and cooperating with them brings much richer experiences than lectures and seminars on creativity and innovation, which are necessary and needed, but far from sufficient.

One of the most significant outcomes of “sandwiched” placement of students in a company for two years is that they lose their fear of the unknown. This unknown is very often quite banal, but very real for those facing it. Students entering a company for the first time often face many worries: how to talk to customers, how to ask questions, how to address people around them, how to ask for help when needed, even how to greet visitors or answer a phone call. By the end of the programme, students are much more self-confident and self-sure as, together with all the theoretical and practical knowledge, they also attain a minimum of needed business etiquette.

The next valuable outcome is that students are not afraid of asking questions or inquiring about ideas in which they are interested. In the company, when they face a real task they have to fulfil but do not know exactly how to do it, they are forced to ask. No theorization helps when a very practical task, like sending an offer, charging a customer, or setting up an account, is to be performed. Such practical tasks urge students to ask practical questions, through which they face the fear of questioning—a significant roadblock on the learning curve. Not only do they learn to ask for help when they do not know how to perform a task, but they also learn to ask the right question, framing it in such a way that they receive an answer that will help them solve their problem situation.

At least once a year we meet with alumni at a social gathering. Discussions with them have shown that, after graduation, some may still not know what they would really like to do for their living (have a paid job or be an independent entrepreneur); however, they unanimously conclude that the programme taught them exactly what they do not want to do or be in their lives. After spending two years in the company, their perceptions of the real world became much more realistic.

Since the first class of 15 students, their number of enrolees has increased to nearly 100 in 2008. In 15 years of existence, the programme has undergone minor changes in subject content and structure, but the main idea remains: foster creativity and entrepreneurship among business students by placing them in mentoring companies and confronting them with many influences. In running the Entrepreneurship programme at the University of Maribor, we have established strong relations with many entrepreneurs and owner/managers of small and medium sized companies. Students have finished over 500 projects in mentoring companies. Some 50 entrepreneurs and managers have joined classroom discussions. With the money paid by mentoring companies and earned through students’ business activities, we have organized study trips for students to SMEs

and SME-supporting institutions in Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Slovenia, Sweden, the UK, and the US.

Is the programme a success? Two years ago we conducted an analysis of the programme; the results were very encouraging. The majority of alumni were employed immediately after their graduation, one fifth of them in the mentoring company. If they were to make the same decision again, 90 percent of graduates would select the Entrepreneurship programme again. Within a 5-year period after graduation, 20 percent of graduates established their own company, and 40 percent were convinced they would do so in the upcoming years. This is a remarkable result considering the fact that the GEM TEA index measuring early stage entrepreneurial activity among Slovenia's adult population accounted for a modest 4,8 percent in 2007 and that the overall entrepreneurial activity was about 8 percent.

One of the extremely positive outcomes of running the Entrepreneurship programme is the recognition of the need for entrepreneurship education among academia and between entrepreneurs and SME managers. In the early years of establishing cooperation between small companies and the university, we noted two interesting opinions. On one side, the reasoning of the majority of entrepreneurs and managers in smaller companies was that cooperating with the university is a waste of time from a practical point of view. On the other side, the deeply ingrained assumptions in the academia was that anything practical should not be at the university, because it is not scientific. Running the Entrepreneurship programme, we managed to eliminate many of these false pictures of reality; today we note changed mindsets or shifts in mental models of academics, entrepreneurs, and managers (Rebernik, 1994). Contemporary professors are more deeply involved in business practices and are also getting a deeper insight into business problems and the learning needs of SMEs. Students are often the ones who open entrepreneurs' eyes and force them to think about what the business "needs to know, what it needs to learn, how it might learn it, and who from" (Gibb, 1997: 20).

We have further learned that, for the sustainable success of entrepreneurship and small business management education at the university level, teachers must be able to provide consulting services for entrepreneurs if asked and must possess mentoring abilities to advise students when needed. It is also recommended that they have some business engagement and be internationally experienced. Yet entrepreneurs/managers and companies also have to be carefully selected. Managers are the partners who really make the difference. Without their commitment to cooperate with the university and participate in the educational and training process, the educational programme—no matter how well organized—would be just an ordinary university programme, "just another brick in the wall". With the commitment of entrepreneurs and managers, the companies start to play a similar role for small business management and entrepreneurship students that laboratories play for chemistry students or flight simulators for future pilots.

One of the main challenges and dilemmas involved in implementing the programme is that it is very time consuming for all parties involved. Successful implementation relies heavily on the willingness of the programme leader to be permanently available—not only invest his time in organizing and leading the programme, but also to promoting it among entrepreneurs. The programme is also based significantly on the expertise of professors teaching in the programme, as they are constantly under the vigilant eyes of entrepreneurs and students. As a state university, their over-fulfilling efforts are not rewarded, and it is hard to keep the spirit alive. To run such a programme successfully, additional funds are needed, which in our case are provided by mentoring companies. Because their money is involved, companies insist on getting good students and on seminar work that is truly practical for the company.

Finally, we realized that not every instructor is capable of action learning (Revans, 1983, 1984) and real-world learning technology. Instructors must not only be effective and experienced teachers, but they must also have enough credibility to discuss practical problems with students and, if necessary, with mentors in the company. In our model, where companies serve as entrepreneurship laboratories, such learning moves outside the classroom to the real world, meaning the professors have to move along with it. For such a paradigmatic shift in education, it is not sufficient for only one course to be run this way; the whole university–industry relations need to be redesigned. The model in which a university is a provider of educational services and an industry is a buyer is changing into a model in which an industry and university are partners working on the same "product": well-educated, trained, creative, and entrepreneurial graduates.

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