

# Innovation and Entrepreneurship Can Be Learned and Built on

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## Abstract

*Global competition has created considerable uncertainty among many young people. Therefore, the education and motivation of young people who take initiatives at all levels of education is an extremely important part of lifelong learning and education, and also forms an important part of general human education. The main purpose of this study is to verify the hypothesis that long-lasting innovation-entrepreneurial education has an effect on improving innovation and entrepreneurial skills in pupils. The study involved 146 fourteen- and fifteen-year-old pupils from 22 Slovenian primary schools who participated in entrepreneurial workshops for one year. The instruments used in the research were a questionnaire for measuring innovative behaviour, and a knowledge test. The data were collected before and upon the completion of the entrepreneurial workshops. The findings show that innovation as well as entrepreneurial skills can be developed and taught, and they also suggest that entrepreneurial circles are a good way of promoting creativity and innovation in schools. Innovation is an activity that can be learned through education to improve basic entrepreneurial skills and the development of entrepreneurial competence. From the perspective of sustainable solutions, approaches are coming to the fore that emphasize creative problem-solving among young people; such an ability is not only a universally useful skill, but is also the essence of entrepreneurial thinking and acting.*

**Key words:** *entrepreneurial skills; innovation development; primary school.*

## Introduction

The global economic crisis has shown that Slovenia lags behind the more regulated and competitive countries around the world, according to a number of important indicators (EIS, 2006). These have not only shown a lack of appropriate policies and strategies necessary to help improve the situation, but also draw attention to the

educational system for young people, which should be made more open and connected with life in order to promote creativity, innovation and entrepreneurship among the youth. What is the use of the knowledge gained in school or good results compared to peers in other European countries (cf. results of TIMS, PISA studies) if individuals cannot integrate them in an innovative manner or cannot apply them due to a lack of entrepreneurship? Acquired knowledge, therefore, only represents a potential that has not been embedded in creative effort. Therefore, the education and motivation of young people who take initiatives at all levels of education is an extremely important part of lifelong learning and education, and also forms an important part of general human education. Most EU member states, therefore, are trying to provide young people with more innovative, entrepreneurial and creative incentives by introducing different measures, some more successful than others. The main purpose of this study is, therefore, to determine whether and how innovation-entrepreneurial education contributes to improved innovativeness in pupils, and to their basic entrepreneurial knowledge.

The need for more ambitious, broad-based innovation policies and entrepreneurial thinking and behaviour among young people is enshrined in a number of European and global documents and resolutions. This is emphasized today more than ever, because creativity and innovation do and will drive the development of today's society. Florida (2002) even talks about the company which is moving from the Information Age into a creative society, while Salkowitz (2010) believes that the world's transformation during the 21st century will be influenced by three factors: the youth, ICT and entrepreneurship. Educational institutions have no impact on the business environment and other necessary resources for the development of entrepreneurship. However, they can encourage young people to reflect and understand the connections between different elements on a micro and macro level of entrepreneurship. Educational institutions can teach young people creative and innovative behaviour and help them to gain some kind of experience. Although the goals and means of promoting creativity and innovation on a variety of different levels of education differ from each other, recent studies (Kourilsky & Carlson, 1997, 1998; Gibb, 1998) show that particular qualities of innovation and entrepreneurship should be included in the educational system. Furthermore, it is possible to develop these qualities in the early years (Kent, 1990; Chell et al., 1991). On the other hand, these qualities are also closely related to personal characteristics, which are developed in the process of the socialization of young people.

The question about whether creativity and innovation, which is connected with it, can be identified as a result of individual talent or whether innovative behaviour can be taught has been a topic of discussion of a number of authors for quite some time (Wehner et al., 1991; Sternberg et al., 1999; Beghetto, 2005; Chell et al., 2009). In spite of that, the concept of innovation in the field of education still remains undefined.

Social and managerial sciences have developed a number of theories and models that define the characteristics of innovators. There are two conflicting psychological approaches to the development of innovation that are treated differently. Traditional theories assume that the human personality is relatively stable. Patterns of behaviour, attitudes and skills are innate and developed in the early years; they are formed in relationships and experiences. It follows that innovators are born and their number is limited. The starting point of the theory is based on the assumption that the individual is the centre of innovation and has certain predispositions for innovative behaviour which is supported by attributes that can be identified. Despite what might seem a reasonable definition, this hypothesis is supported by relatively little research, most of which is associated with entrepreneurship (Chell et al., 2009; Setnikar Cankar et al., 2011, Klun et al., 2013), not with innovation. Mc Clelland (1987), who identified the motivation for achievement as the driving force of business and economic efficiency, connects innovative treatment with high achievements. Utsch and Rauch (2000) reach a similar conclusion and argue that innovative behaviour increases the motivation to achieve business results.

Social-cognitive theorists have developed a different view, which is not based on these realities, but places greater emphasis on social learning (Mischel et al., 1995). Their theories rest on the proposition that behaviour, beliefs, attitudes, values and skills can be learned (Bandura, 1994; Chell et al., 2009). Ajzen's theory (1987) of planned behaviour, for example, assumes that intention is a good predictor of future behaviour. The author attributes the reasons for the achievements and development of self-efficacy to the impact of cultural norms, social processes and relationships. The idea is that people believe in first achieving partial goals because only then it is possible for them to realize the defined final goals. The fact is that the social-cognitive approach is conceptually well developed and can be used without hesitation in the innovation process. Moreover, this approach assumes that innovation activity, like any other activity, can be learned. This is confirmed by several studies (Likar, 2003; Ferrari et al., 2009; Chell et al., 2009). In all forms of learning, the process is associated with experience and experimentation. This heuristic model of learning provides young people with opportunities to develop different thinking, and to create ideas and plans related to practical implementation.

Of course, encouraging pupils to generate new ideas, is just the starting step. In order to develop a good idea, it must be transformed into tangible form and used on one of the markets (Likar, 2004). Although school is not a company, it is important for pupils to have a chance to translate creative ideas across the entire invention-innovation chain and present their achievements, thereby developing and internalizing innovative behaviour. This includes the management of specific stages and procedures pupils can learn if they are properly managed. Although talent and determination are not sufficient, they are nevertheless a necessary precondition for other useful knowledge.

This refers particularly to integrated learning, which allows problem-solving in realistic and authentic situations. This means schoolwork cannot be separated from local communities and the process of production. Such a process enhances self-confidence and builds competence based on individual personal resources; it also improves the action component. This is the way to develop entrepreneurial competence, which is not an absolute ability independent of working and living contexts (Svetlik, 2009). An individual shows the highest level of competence when he or she manages atypical conditions.

Arguing that Slovenian schools are without ideas would be unfair; they also have many organized external incentives for the development of creative and innovative processes in pupils. The so-called entrepreneurial workshops have been dedicated to promoting creativity, innovation and entrepreneurship among young people in schools. This activity was particularly encouraged by a project led by the Chamber of Crafts and Small Business of Slovenia in 2010/2011 in eight regions.<sup>1</sup> The purpose of the project was to train teacher-mentors who were then to train pupils, work with them and with the representatives of the local community (entrepreneurs, innovators) in entrepreneurial workshops, and carry out common projects. The whole concept of work is based on the classic concept of the development of innovation and entrepreneurship. The process of work has been focused on several interrelated stages: the stage of defining the problem, the observation phase, the phase of ideas, the prototyping phase, and the implementation phase. Depending on the selected concept developed by a particular school project group, the work was scheduled flexibly (usually at the end of the day), but was continuous. External staff and teachers of other disciplines were included in the work when appropriate, in each phase of work.

In spite of that, research findings (Lavrič, 2010; Cankar et al., 2011) show that young people perceive a unique deficit in the educational system in this field. That is why our main research question is whether these dimensions can be developed and learned. The objectives of the study were as follows:

- identify changes in the innovative behaviour of the pupils involved in a one-year programme;
- identify changes in the basic theoretical knowledge in the field of entrepreneurship in the pupils involved in a one-year programme.

In accordance with the defined research objectives, the following hypotheses were formed:

H1: Innovation-entrepreneurial education contributes to the improvement of innovation in pupils.

H2: Innovation-entrepreneurial education contributes to the improvement of basic theoretical knowledge in the field of entrepreneurship in pupils.

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<sup>1</sup> "Implementation of a comprehensive programme to promote creativity, innovation and entrepreneurship of young people through the integration of the activities of the local community in the years 2010, 2011, 2012", which was hosted by the Chamber of Craft and Business of Slovenia.

## **Methods**

The study involved 146 pupils: 80 fourteen- and 66 fifteen-year-old pupils from 22 Slovenian primary schools who participated in entrepreneurial workshops; 91 of them were girls and 55 boys. The schools included were selected by chance. In the selection, we used a list of those schools that held entrepreneurial workshops in the school years 2010/2011 and 2011/2012. The pupils who participated in the project were included in the survey twice. The data were first collected in October 2011 before the start of the entrepreneurial workshops and at the end of March 2012, when the workshops were finished.

The first goal was verified by means of a questionnaire. We used the instrumentation by Likar (2003; 2004) and Chell et al. (2009), and modified it. The scale in the questionnaire, which measured attitudes towards innovation, was comprised of the items describing pupils' attitudes towards novelty, their ability to create new ideas, and the ability to realize ideas, amounting to a total of 9 items. Each of these items was defined as a statement where pupils rated their agreement on an interval scale, with a score of 1 to 5 (1 completely disagree and 5 completely agree). The reliability coefficient (Cronbach's  $\alpha$ ) of the instrument was 0.75. The statistical significance of the differences between the first and second measurements (before and after attending the workshops) was tested with the t-test.

The second objective was to measure the basic theoretical knowledge in the field of entrepreneurship. The modified knowledge test (Likar, 2003, 2004; Chell et al., 2009) with which we verified the theoretical knowledge of pupils in the field of entrepreneurship consisted of several items describing different aspects of entrepreneurship, entrepreneur, business opportunities and entrepreneurial ideas, entrepreneurial process, and business plan. All together the scale comprised 17 items (Table 2). Pupils' answers to individual questions were scored 1 point if the answer was correct and 0 points if the answer was incorrect. The reliability coefficient (Cronbach's  $\alpha$ ) of the instrument measuring basic theoretical knowledge in the field of entrepreneurship was 0.68. The statistical significance of the differences between the first and second measurements (before and after attending the workshops) was tested with the t-test.

## **Results**

Results are presented for each objective separately and shown in the accompanying tables. Our first goal was to present the changes in the field of the innovative behaviour of pupils involved in a one-year corporate workshop. The findings (Table 1) show that pupils who attended the business workshops had significantly improved their attitudes to innovations (showed by, on average, higher levels of agreements with the statements) after a year.

Table 1.  
*Pupils' attitudes towards innovations*

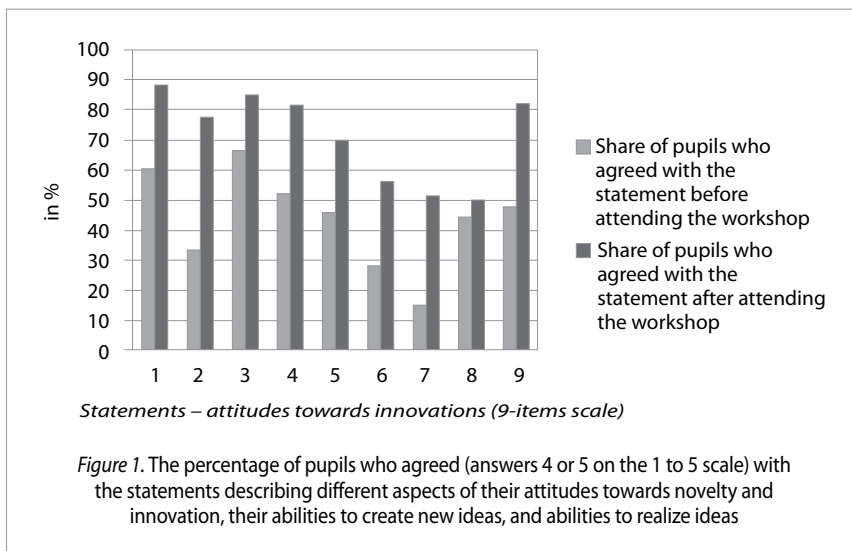
Item number	Item	Before attending the entrepreneurial workshop	After attending the entrepreneurial workshop	t
1	Innovation and creativity are strongly connected.	3.64	4.49	-7.315**
2	I know at least three innovative businesses in Slovenia.	2.91	4.16	-9.055**
3	I love to do new things which I have never done before, and when doing that I do not have any fear.	3.84	4.26	-4.131**
4	I am never satisfied with my first solution and I always seek out another, better one.	3.41	4.16	-6.863**
5	I can impress other people with my idea presentation.	3.43	4.03	-5.982**
6	I openly accept new ideas.	2.68	3.45	-4.615**
7	I do have much better ideas for particular problem-solving than the rest of my colleagues.	2.64	3.41	-6.258**
8	I realize my ideas constantly.	3.29	3.58	-2.874**
9	I do know the process from an idea to its realization.	3.34	4.34	-8.429**

Notes: At items 3 and 4 pupils were instructed to evaluate the agreement with the statement as a whole (with both parts of the statement).

\*\* p<0.01

Pupils who participated in the workshops have a better attitude towards innovations and are more open to the adoption and creation of new ideas; they also have a better understanding of the selected ideas. Statistically significant differences (at  $p < 0.01$ ) were identified at each of the nine items, meaning that pupils' evaluation of their own attitudes towards different aspects of innovative behaviour were higher than before their participation in the workshops. The highest score, 4.49 on a 1 to 5 scale, was found for the statement "Innovation and creativity are strongly connected". It is also important that the ability to have the control over the process from an idea to its realization was, on average, well-recognized by the pupils, since the average level of agreement with this statement equalled 4.34. After attending the workshops, pupils agreed significantly more often with the statements describing different aspects of their attitudes towards novelty and innovation, their abilities to create new ideas, and abilities to realize ideas, as presented by Figure 1.

The work method used in the entrepreneurial workshop is obviously a good learning opportunity for pupils, and it triggers their strong emotional and motivational involvement. It is the supporting learning environment that encourages their innovativeness – they develop attitudes that are encouraging them to effectively deal



with obstacles. Motivational beliefs are an integral part of students' self-regulation (Boekaerts, 2013). Entrepreneurial workshops also place emphasis on the approaches that encourage creativity and communication by pupils (Darling-Hammond et al., 1995) as well as the collaborative learning, which unfortunately is not a very well-established form of work in our schools.

The study's second goal was to present changes in the basic theoretical knowledge in the field of entrepreneurship by the pupils involved in a one-year programme. Again, the results confirmed (Table 2) that, after a year of work, the knowledge of the pupils who attended entrepreneurial workshops was improved significantly in all aspects, i.e. their general knowledge about innovative entrepreneurial process was at a much higher level than before the training. This is not surprising. The way the entrepreneurial workshop is organised and implemented leaves a deeper impression on pupils than some other ways of learning. While learning usually focuses on studying literature, pupils in the entrepreneurial workshops learn how to combine practical work-related situations in life with the theoretical knowledge. It is therefore an aspect of the application of knowledge and the development of life patterns. Research studies (Darling-Hammond et al., 2008) have already acknowledged that young people remember the material better if they are able to use it in the real-world situations.

The results expressed as average number of correctly solved tasks per pupil (out of 17 tasks described in Table 2) show that at the beginning of the workshops pupils who participated in the workshops correctly solved an average of 5.32 out of 17 tasks set. After a one-year part-time workshop, the number rose to an average of 12.13 tasks.

Table 2.

*Entrepreneurial knowledge of pupils –correct answers*

Item number	Item	Before attending the entrepreneurial workshop	After attending the entrepreneurial workshop	t
1	Define the concept of creativity.	0.22	0.75	-12.897**
2	Define the concept of entrepreneurship.	0.21	0.72	-12.050**
3	What is brainstorming?	0.46	0.81	-7.920**
4	List three advantages of common problem-solving.	0.40	0.78	-9.235**
5	Who is an entrepreneur?	0.37	0.85	-10.970**
6	List three characteristics of innovative humans.	0.47	0.88	-9.533**
7	Can every idea also be a business opportunity? Comment on your decision.	0.21	0.77	-13.084**
8	Describe what you understand by the concept of business opportunity.	0.29	0.64	-7.794**
9	Specify and describe a business idea, which you think could bring profit if you realized it.	0.52	0.78	-6.484**
10	What are three elements of a business process?	0.10	0.58	-11.098**
11	List at least three types of insurance.	0.59	0.84	-6.359**
12	List at least three legal forms of a business.	0.16	0.36	-5.407**
13	What do you understand by the term business plan?	0.18	0.76	-13.639**
14	List at least three elements that are standard components of any business plan.	0.08	0.68	-14.832**
15	What do you understand by the term market research?	0.15	0.63	-11.556**
16	Why are interviews necessary and what do we gain from them?	0.42	0.70	-7.061**
17	List five possible ways of advertising a new product.	0.55	0.74	-4.614**

\*\* p<0.01

## Discussion

Interpretation of the results is carried out so that the findings are shown by individual goals, but reasonably rounded and presented within each group separately.

A one-year participation of pupils in the entrepreneurial workshops obviously has some effect on the changes in their innovative behaviour. Innovativeness can therefore be developed and taught in the educational process if it promotes the development and learning of individuals and offers appropriate opportunities for them to pursue their



ideas. This ability, which involves creativity and innovation, risk taking, planning and carrying out projects to achieve the objectives, is to help young people both in their daily lives as well as later in the workplace. School here can do a lot. The purpose of innovation-entrepreneurial education is, according to Kent (1990), to acquire and develop creative activity and independent action, whenever necessary. Other scholars (Chell et al., 2009) also recognize this by saying that innovative practices and entrepreneurial competences can be developed from the earliest years. This happens especially when the focus is on an interdisciplinary approach that provides support and understanding of complex issues of specific areas; students in such a learning environment should seek their own original solutions and develop them with the help of external partners and the local environment. Innovations are happening exactly at the interface of different fields.

A similar picture is also reflected in the field of entrepreneurial skills, which was also checked. Pupils who participated in the entrepreneurial workshops progressed in knowledge after a year. This cannot be said for the pupils of the control group. Kourilsky and Walstad (1998), and McMullan and Gillin (1998) reported similar results. The authors showed that entrepreneurial education has a positive effect on the acquisition of entrepreneurial skills. Rebernik (2009) is more cautious; he believes everything that constitutes entrepreneurship cannot be taught. Part of this attribute is primal creativity, which could be called entrepreneurial talent. However, it is definitely possible to learn and understand what a business idea is, how to identify a business opportunity, what constitutes a business plan, how to draw it up and other related information.

While authors may differ in their opinion about whether it is possible to develop the qualities of innovation and entrepreneurship in young people at an early age in the educational process, there is consensus on teaching and learning methods. The fact is that traditional school subjects do not adequately cater for the skills necessary for participation in society, including entrepreneurial skills (CIDREE, 1998). However, entrepreneurship cannot be taught in a rigid and scholastic way, so Cotton and Gibb (1992) advise young people to experience the concept of entrepreneurial sense rather than entrepreneurship. There is a prevailing belief that young people acquire knowledge about this issue in an active and experimental way, which points them towards systematic thinking and entrepreneurial action. In the foreground is learning by doing, involving experiences, experimentation, risk considerations and tolerance of mistakes, creative problem-solving, feedback in social interaction, role playing and interaction with the world of adults.

It is particularly important for pupils to experience and understand the need to use the acquired knowledge. Those who win in the world today are not the people with the most knowledge, but those who understand the practical value and importance of implementing such knowledge. There are ample opportunities for the young to achieve this through collaboration with the local community (Kilpatrick et al., 2010, Setnikar Cankar et al., 2013). The idea is that programmes and specific activities are developed in dialogue with the community and various stakeholders. This may affect

the dynamic development of learning and knowledge opportunities offered by a number of economic, health, environmental, cultural, social and other public policies. On this level there is also a high potential for innovation.

Despite the favourable results, the problem is that business workshops do not represent a longer-term solution which will help to promote innovative behaviour among young people. At the same time, recent studies show that traditional administrative and corporate strategies, and the use of business plans to promote the development of creativity and innovation in young people, especially primary school pupils, do not give satisfactory results (Garavan & O'Cinneide, 1994; Honig & Karlsson, 2004). The aforementioned authors emphasize the promotion of creative problem-solving (Martin, 2004; Kelley et al., 2005; Meinel & Leifer, 2011), which is a universally useful skill, and also the essence of entrepreneurial thinking and action. This is particularly true for the school population, and consequently, the so-called design thinking (Rauth et al., 2010) is now occupying a central place in primary and secondary schools (Carroll et al., 2010). This is based on the methods that have been developed in designing practices and does not include only product design, but is also the principle of product development services, business models, places, experiences and concepts.

The essence of this way of thinking is to identify the real problems and needs of the individual or company and offer concrete solutions to these problems. Pedagogical approaches to developing the designer way of thinking are basically highly experiential, because pupils develop their skills through practical tasks, experiments and experiences. Basic components of the methodology (Rauth et al., 2010) are observing and understanding users and society through methods based on empathy, on defining problems and generating a set of potential solutions, prototyping various aspects of those solutions, and actually testing them, which can be either in the form of innovative products or services, processes, places or experiences. The main advantage of the described approach is holism, comprising both user-human and technological and business cases for the development of solutions to the problem and using the relevant technical and business tools and skills. In addition, the approach is highly user-oriented and action-oriented, and promotes the transfer of knowledge from all those involved to solve the problem of the relevant disciplines (Brown, 2008). Design-thinking pedagogy does not call for a revolution of the educational system but is a welcome addition to the existing methods, which include entrepreneurial workshops and other organized forms of promoting entrepreneurship at all levels of education.

## **Conclusions**

In this study, we found that the innovative behaviour of the pupils who attended entrepreneurial workshops for a year showed a statistically significant improvement. This confirmed the hypothesis (H1) that innovation-entrepreneurial education contributes to the improvement of innovation in pupils. Similar findings are also

reflected in the field of entrepreneurial skills, which improved after a year of work in all five areas specific to the innovation-entrepreneurial process. Again, the hypothesis (H2) that innovation-entrepreneurial education contributes to the improvement of basic entrepreneurial skills in pupils was confirmed.

The findings suggest that entrepreneurial circles are a good way of promoting creativity and innovation in schools. Innovation is an activity that can be learned through education to improve basic entrepreneurial skills and the development of entrepreneurial competence. From the perspective of sustainable solutions, approaches are coming to the fore (e.g. design thinking and work) that emphasize creative problem-solving among young people; such an ability is not only a universally useful skill, but it is also the essence of entrepreneurial thinking and action. At the same time, this raises the question of how to design a school system that will enable all young people not only to deal with the basic advantages and disadvantages of entrepreneurial careers, but also open up possibilities for deeper engagement with business content, especially among those who are particularly interested in such content.

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# Inovativnost i poduzetništvo može se naučiti i nadograditi

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## Sažetak

Globalna je konkurencija stvorila znatnu nesigurnost među mnogim mladim ljudima. Stoga je obrazovanje i motivacija mladih ljudi koji preuzimaju inicijativu na svim razinama obrazovanja iznimno važan dio cjeloživotnoga učenja i obrazovanja, a također čini važan dio općega ljudskog obrazovanja. Glavni je cilj ovoga istraživanja provjeriti hipotezu prema kojoj dugotrajno inovativno i poduzetničko obrazovanje utječe na poboljšanje inovativnosti i poduzetničkih vještina učenika. U istraživanju je sudjelovalo 146 četrnaestogodišnjaka i petnaestogodišnjaka iz 22 slovenske osnovne škole koji su bili uključeni u poduzetničke radionice u trajanju od jedne godine. Instrumenti korišteni u istraživanju su upitnik za mjerenje inovativnoga ponašanja i test znanja. Podatci su prikupljeni prije i po završetku poduzetničkih radionica. Rezultati istraživanja pokazuju da se inovativnost, kao i poduzetničke vještine, mogu razviti i naučiti, ali i ukazuju na to da su poduzetnički krugovi dobar način promicanja kreativnosti i inovativnosti u školama. Inovativnost je aktivnost koja se može naučiti putem obrazovanja s ciljem poboljšanja temeljnih poduzetničkih vještina i razvoja poduzetničke kompetencije. Iz perspektive održivih rješenja do izražaja dolaze pristupi koji naglašavaju kreativno rješavanje problema među mladima; navedena sposobnost nije samo univerzalno korisna vještina već je i bit poduzetničkoga razmišljanja i djelovanja.

**Ključne riječi:** osnovna škola; poduzetničke vještine; razvoj inovativnosti.

## Uvod

Globalna ekonomska kriza pokazala je da Slovenija zaostaje za bolje reguliranim i konkurentnijim zemljama svijeta, prema nizu važnih pokazatelja (EIS, 2006). Navedeni su pokazatelji upozorili ne samo na nedostatak odgovarajuće politike i strategija potrebnih kako bi se poboljšala situacija već su i skrenuli pozornost na obrazovni sustav namijenjen mladim ljudima, koji bi trebao u većoj mjeri biti otvoren i povezan sa životom s ciljem promicanja kreativnosti, inovativnosti i poduzetništva među mladima. Koja je korist znanja stečenih u školi ili dobrih rezultata u usporedbi s vršnjacima u drugim europskim zemljama (vidjeti rezultate TIMS, PISA istraživanja) ako ih pojedinci ne mogu integrirati na inovativan način, odnosno ne mogu ih

primijeniti zbog nedostatka poduzetništva? Stečeno znanje, stoga, predstavlja samo potencijal koji nije ugrađen u kreativna nastojanja. Stoga je obrazovanje i motivacija mladih ljudi koji preuzimaju inicijativu na svim razinama obrazovanja iznimno važan dio cjeloživotnoga učenja i obrazovanja, a također čini važan dio općega ljudskoga obrazovanja. Većina zemalja članica EU stoga nastoji pružiti mladim ljudima više inovativnih, kreativnih i poduzetničkih poticaja uvođenjem različitih mjera, od kojih su neke uspješnije od drugih. Glavni je cilj ovoga istraživanja stoga utvrditi doprinosi li i kako inovativno-poduzetničko obrazovanje poboljšanju inovativnosti kod učenika i njihovim osnovnim poduzetničkim znanjima.

Potreba za ambicioznijom, široko postavljenom inovacijskom politikom i poduzetničkim razmišljanjem i ponašanjem među mladima utkana je u brojne europske i svjetske dokumente i rezolucije. Ona se naglašava danas više nego ikad, jer kreativnost i inovativnost jesu i bit će pokretači razvoja današnjega društva. Florida (2002) čak govori o tvrtci koja se kreće od informacijskoga doba prema kreativnomu društvu, a Salkowitz (2010) smatra da će transformacija u svijetu tijekom 21. stoljeća biti pod utjecajem tri čimbenika: mladi, informacijsko-komunikacijske tehnologije i poduzetništvo. Obrazovne institucije nemaju nikakav utjecaj na poslovno okruženje i druge potrebne resurse za razvoj poduzetništva. Međutim, one mogu potaknuti mlade ljude na razmišljanje i razumijevanje veza između različitih elemenata na mikro i makro razini poduzetništva. Obrazovne institucije mogu naučiti mlade ljude kreativnom i inovativnom ponašanju i pomoći im da steknu neku vrstu iskustva. Iako se ciljevi i sredstva za promicanje kreativnosti i inovativnosti na različitim razinama obrazovanja međusobno razlikuju, novija istraživanja (Kourilsky i Carlson, 1997, 1998; Gibb, 1998) pokazuju da određene kvalitete inovativnosti i poduzetništva trebaju biti uključene u obrazovni sustav. Nadalje, te je osobine moguće razviti u ranim godinama (Kent, 1990; Chell i sur., 1991). S druge strane, one su također tijesno povezane s osobnim karakteristikama, koje se razvijaju u procesu socijalizacije mladih.

Pitanje mogu li kreativnost i inovativnost, koja je s njom povezana, biti prepoznate kao rezultat individualnog talenta ili se inovativno ponašanje može naučiti, javlja se kao jedna od tema rasprave brojnih autora već duže vrijeme (Wehner i sur., 1991; Sternberg i sur., 1999; Beghetto 2005; Chell i sur., 2009). Unatoč tomu, pojam inovativnosti u području obrazovanja i dalje ostaje nedefiniran. Društvene i menadžerske znanosti razvile su niz teorija i modela koji definiraju značajke inovatora. Postoje dva suprotna psihološka pristupa razvoju inovativnosti koji se različito tretiraju. Tradicionalne teorije pretpostavljaju da je ljudska osobnost relativno stabilna. Obrasci ponašanja, stavovi i vještine urođeni su i razvijaju se već u ranim godinama; oblikuju se u odnosima s drugima i putem iskustva. Iz toga slijedi da se inovatori rađaju kao takvi i da je njihov broj ograničen. Polazište teorije temelji se na pretpostavci da je pojedinac u središtu inovacija i ima određene predispozicije za inovativno ponašanje koje je potkrijepljeno atributima koji se mogu prepoznati. Unatoč naizgled razumnoj definiciji, tu pretpostavku potvrđuje relativno malen broj

istraživanja, od kojih je većina povezana s poduzetništvom (Chell i sur., 2009; Setnikar Cankar i sur., 2011; Klun i sur., 2013), a ne s inovacijama. Mc Clelland (1987), koji je identificirao motivaciju za postignuća kao pokretačku snagu poslovne i ekonomske učinkovitosti, spaja inovativni tretman s visokim postignućima. Utsch i Rauch (2000) došli su do sličnoga zaključka i tvrde da inovativno ponašanje povećava motivaciju za postizanje poslovnih rezultata.

Socijalno-kognitivni teoretičari razvili su drugačiji stav, koji se ne temelji na tim realnostima, već stavlja znatniji naglasak na socijalno učenje (Mischel i sur., 1995). Njihove teorije počivaju na pretpostavci da se ponašanje, uvjerenja, stavovi, vrijednosti i vještine mogu naučiti (Bandura, 1994; Chell i sur., 2009). Ajzenova teorija (1987) planiranoga ponašanja, primjerice, pretpostavlja da je namjera dobar pokazatelj budućega ponašanja. Autor pripisuje razloge postignuća i razvoj samoučinkovitosti utjecaju kulturnih normi, društvenih procesa i odnosa. Ideja je da ljudi vjeruju najprije u postizanje parcijalnih ciljeva, jer tek je tada moguće ostvariti definirane krajnje ciljeve. Činjenica je da je socijalno-kognitivni pristup konceptualno dobro razvijen i može se koristiti bez oklijevanja u procesu inovacija. Štoviše, taj pristup pretpostavlja da se inovacijske aktivnosti, kao i bilo koje druge aktivnosti, mogu naučiti. To potvrđuju i neka istraživanja (Likar, 2003; Chell i sur., 2009; Ferrari i sur., 2009). U svim oblicima učenja proces je povezan s iskustvom i eksperimentiranjem. Ovaj heuristički model učenja pruža mladim ljudima priliku za razvoj drugačijega razmišljanja i stvaranje ideja i planova vezanih uz praktičnu primjenu.

Naravno, poticanje učenika na stvaranje novih ideja samo je početni korak. Da bi se razvila dobra ideja, ona mora biti pretvorena u opipljiv oblik i korištena na jednom od tržišta (Likar, 2004). Iako škola nije tvrtka, važno je da učenici imaju priliku provesti kreativne ideje putem cjelokupnog lanca koji počinje izumom, a završava inovacijom, i predstaviti svoja postignuća, čime se razvija i internalizira inovativno ponašanje. Ono uključuje upravljanje određenim fazama i postupke koje učenici mogu naučiti ako ih se usmjerava na odgovarajući način. Iako talent i volja nisu dovoljni, oni su ipak nužan preduvjet za druge korisne spoznaje, što se posebno odnosi na integrirano učenje koje omogućuje rješavanje problema u realnim i autentičnim situacijama. To znači da se rad u školi ne može odvojiti od lokalnih zajednica i procesa proizvodnje. Takav proces povećava samopouzdanje i razvija sposobnosti utemeljene na pojedinačnim osobnim resursima; također poboljšava akcijsku komponentu. Na taj se način razvija poduzetnička kompetencija, koja nije apsolutna sposobnost neovisna o radnim i životnim kontekstima (Svetlik, 2009). Pojedinaac pokazuje najvišu razinu sposobnosti kada se on ili ona uspješno snalaze u atipičnim uvjetima.

Tvrditi da su slovenske škole bez ideja, bilo bi nepošteno. One također imaju brojne organizirane vanjske poticaje za razvoj kreativnih i inovativnih procesa kod učenika. Takozvane poduzetničke radionice posvećene su promicanju kreativnosti, inovativnosti i poduzetništva među mladima u školama. Ta je aktivnost posebno potaknuta projektom pod vodstvom Obrtničko-poduzetničke komore Slovenije



provedenim 2010./2011. godine u osam regija.<sup>2</sup> Svrha projekta bila je obučiti učitelje mentore koji bi osposobili učenike, radili s njima i s predstavnicima lokalne zajednice (poduzetnicima, inovatorima) u poduzetničkim radionicama i provodili zajedničke projekte. Cijeli koncept rada temelji se na klasičnom konceptu razvoja inovacija i poduzetništva. Proces rada usmjeren je na nekoliko međusobno povezanih faza: fazu definiranja problema, fazu promatranja, fazu prijedloga ideja, fazu izrade prototipa i fazu provedbe. Ovisno o izabranom konceptu koji su razvile određene školske projektne grupe, rad je isplaniran fleksibilno (obično na kraju dana), ali je kontinuiran. Vanjski suradnici i nastavnici iz drugih disciplina bili su uključeni u rad kada je to bilo potrebno, u svim fazama rada.

Unatoč tome, rezultati istraživanja (Lavrič, 2010; Cankar i sur., 2011) pokazuju da mladi ljudi uočavaju jedinstveni nedostatak u odgojno-obrazovnome sustavu u tom području. Zato je naše glavno istraživačko pitanje mogu li se te dimenzije razviti i naučiti. Ciljevi ovoga istraživanja bili su sljedeći:

- identificirati promjene u inovativnom ponašanju učenika uključenih u jednogodišnji program;
- identificirati promjene u osnovnim teorijskim znanjima iz područja poduzetništva kod učenika uključenih u jednogodišnji program.

U skladu s definiranim ciljevima istraživanja, oblikovane su sljedeće hipoteze:

H1: Inovacijsko-poduzetničko obrazovanje pridonosi poboljšanju inovativnosti kod učenika.

H2: Inovacijsko-poduzetničko obrazovanje pridonosi poboljšanju osnovnih teorijskih znanja iz područja poduzetništva kod učenika.

## **Metode**

U istraživanju je sudjelovalo 146 učenika: 80 četrnaestogodišnjaka i 66 petnaestogodišnjaka iz 22 slovenske osnovne škole koji su sudjelovali u poduzetničkim radionicama; od ukupnog broja sudionika 91 su djevojčice i 55 dječaci. Uključene su škole izabrane slučajno. U odabiru smo koristili popis onih škola koje su organizirale poduzetničke radionice u školskoj godini 2010./2011. i 2011./2012. Učenici koji su sudjelovali u projektu uključeni su u istraživanje dva puta. Podatci su prvi put prikupljeni u listopadu 2011., prije početka poduzetničkih radionica i na kraju ožujka 2012., kada su radionice završene.

Prvi je cilj provjeren s pomoću upitnika. Koristili smo se instrumentima autora Likara (2003, 2004) i Chell i sur. (2009) koje smo modificirali. Skala u upitniku, koja mjeri stavove prema inovacijama, sastojala se od ukupno 9 čestica koje opisuju stavove učenika prema novome, njihovu sposobnost stvaranja novih ideja i sposobnost za

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<sup>2</sup> „Implementacija sveobuhvatnoga programa za promicanje kreativnosti, inovativnosti i poduzetništva mladih kroz integraciju aktivnosti lokalne zajednice 2010., 2011., 2012. godine”, kojemu je domaćin bila Obrtničko-poduzetnička komora Slovenije.

realizaciju ideje. Svaka od navedenih čestica definirana je kao izjava za koju su učenici procjenjivali svoje slaganje na intervalnoj ljestvici, ocjenom od 1 do 5 (1-u potpunosti se ne slažem i 5-u potpunosti se slažem). Koeficijent pouzdanosti (Cronbach alfa) instrumenta bio je 0,75. Statistički značajna razlika između prvoga i drugoga mjerenja (prije i nakon pohađanja radionice) testirana je t-testom.

Drugi je cilj bio provjera osnovnih teorijskih znanja iz područja poduzetništva. Modificirani test znanja (Likar, 2003, 2004; Chell i sur., 2009) kojim smo potvrdili teorijska znanja učenika iz područja poduzetništva sastojao se od nekoliko stavki koje opisuju različite aspekte poduzetništva, poduzetnike, poslovne mogućnosti i poduzetničke ideje, poduzetnički proces i poslovni plan. Ljestvica se sastojala od ukupno 17 čestica (Tablica 2). Učenički odgovori na pojedina pitanja vrednovani su 1 bodom u slučaju ako je odgovor bio zočan i 0 bodova ako je odgovor bio netočan. Koeficijent pouzdanosti (Cronbach alfa) instrumenta za mjerenje osnovnih teorijskih znanja iz područja poduzetništva bio je 0,68. Statistički značajna razlika između prvoga i drugoga mjerenja (prije i nakon pohađanja radionice) testirana je t-testom.

## **Rezultati**

Rezultati su prikazani za svaki cilj odvojeno u priloženim tablicama. Naš je prvi cilj bio predstaviti promjene u području inovativnoga ponašanja učenika uključenih u jednogodišnje korporativne radionice. Rezultati (Tablica 1) pokazuju da su učenici koji su sudjelovali u radionicama iz poduzetništva nakon godinu dana znatno poboljšali svoje stavove prema inovacijama (što se vidi prema, u prosjeku, većem slaganju s izjavama u upitniku).

Tablica 1.

Učenici koji su sudjelovali u radionicama imaju bolji stav prema inovacijama i otvoreniji su za usvajanje i stvaranje novih ideja; također, bolje razumiju odabrane ideje. Statistički značajne razlike (pri  $p < 0,01$ ) utvrđene su za svaku od devet čestica, što znači da je učenička procjena vlastitih stavova prema različitim aspektima inovativnoga ponašanja bila viša nego prije njihova sudjelovanja u radionicama. Najviša ocjena, 4,49 na skali od 1-5, utvrđena je za izjavu 'Inovativnost i kreativnost usko su povezani'. Također je važno da je mogućnost kontrole nad procesom od ideje do realizacije u prosjeku prepoznata od učenika, budući da prosječno slaganje s tom tvrdnjom iznosi 4,34. Nakon pohađanja radionica, učenici su se značajno češće slagali s izjavama koje opisuju različite aspekte njihovih stavova prema novome i inovacijama, njihove sposobnosti da stvaraju nove ideje i sposobnosti da realiziraju te ideje, kao što je prikazano na Slici 1.

Slika 1.

Način rada primijenjen u poduzetničkoj radionici očigledno je učenicima dobra prilika za učenje i potiče njihov jak emocionalni i motivacijski angažman. Poticajno okruženje za učenje pridonosi njihovoj inovativnosti - oni razvijaju stavove koji im

pomažu kod učinkovitog prevladavanja prepreka. Motivacijska uvjerenja sastavni su dio samoregulacije učenika (Boekaerts, 2013). Poduzetničke radionice također stavljaju naglasak na pristupe koji potiču kreativnost i komunikaciju kod učenika (Darling-Hammond i sur., 1995), kao i suradničko učenje, što nažalost nije rasprostranjen način rada u našim školama.

Drugi cilj istraživanja bio je predstaviti promjene u osnovnim teorijskim znanjima iz područja poduzetništva kod učenika koji su sudjelovali u jednogodišnjem programu. Ponovno su rezultati potvrdili (Tablica 2) da su, nakon godinu dana rada, učenici koji su pohađali poduzetničke radionice značajno poboljšali svoja znanja u svim aspektima, odnosno njihova su opća znanja o inovativnom poduzetničkom procesu bila na znatno višoj razini nego prije obuke. Što i ne iznenađuje. Način na koji je poduzetnička radionica organizirana i kako se provodi ostavlja dublji dojam na učenike od nekih drugih oblika učenja. Dok je učenje obično usmjereno na proučavanje literature, učenici u poduzetničkim radionicama uče kako kombinirati praktične situacije povezane s poslom i teorijska znanja. To je, prema tome, jedan aspekt primjene znanja i razvoja životnih obrazaca. Istraživanja (Darling-Hammond i sur., 2008) su već potvrdila da mladi ljudi pamte sadržaj bolje ako mogu primijeniti znanja u stvarnim situacijama.

Tablica 2.

Rezultati o prosječnom broju točno riješenih zadataka po učeniku (od ukupno 17 zadataka opisanih u tablici 2) pokazuju da su na početku radionice učenici koji su sudjelovali u radionicama točno riješili prosječno 5,32 od 17 postavljenih zadataka. Nakon jedne godine povremenoga rada u radionici, broj točno riješenih zadataka porastao je na prosječno 12,13 zadataka.

## **Rasprava**

Interpretacija je provedena tako da su rezultati prikazani prema pojedinim ciljevima, ali su relativno zaokruženi i prikazani unutar svake grupe pojedinačno.

Jednogodišnje sudjelovanje učenika u poduzetničkim radionicama očito ima određeni utjecaj na promjene u njihovu inovativnom ponašanju. Inovativnost se dakle može razvijati i poučavati u odgojno-obrazovnom procesu ako potiče razvoj i učenje pojedinaca i pruža im odgovarajuće mogućnosti za ostvarivanje njihovih ideja. Ta sposobnost, koja uključuje kreativnost i inovativnost, preuzimanje rizika, planiranje i provođenje projekata koji vode postizanju ciljeva, može pomoći mladim ljudima, kako u svakodnevnome životu, tako i poslije na radnome mjestu. Škola u vezi s tim može puno učiniti. Svrha je inovacijsko-poduzetničkoga obrazovanja, prema Kentu (1990), steći i razvijati kreativne aktivnosti i samostalno djelovanje, kad god je to potrebno. Drugi se znanstvenici (Chell i sur., 2009) također slažu s tim da se inovativnost i poduzetničke kompetencije mogu razvijati od najranijih godina. To se osobito događa kada je fokus na interdisciplinarnom pristupu koji pruža podršku i razumijevanje složenih pitanja vezanih uz specifična područja; učenici u takvome okruženju trebaju

tražiti svoja originalna rješenja i razvijati ih uz pomoć vanjskih partnera i lokalne sredine. Inovacije se događaju upravo na granici između različitih područja.

Slična je situacija i u području poduzetničkih vještina, što smo također provjerili. Učenici koji su sudjelovali u poduzetničkim radionicama pokazali su napredak u znanju već nakon godinu dana. Isto se ne može reći za učenike iz kontrolne skupine. Kourilsky i Walstad (1998), i McMullan i Gillin (1998) došli su do sličnih rezultata. Autori su pokazali da poduzetničko obrazovanje ima pozitivan učinak na stjecanje poduzetničkih vještina. Rebernik (2009) je oprezniji; on vjeruje da se ne može naučiti sve ono što čini poduzetništvo. Dio je toga obilježja prvobitna kreativnost, koju bismo mogli nazvati poduzetničkim talentom. Međutim, definitivno je moguće naučiti i razumjeti što je poslovna ideja, kako prepoznati poslovnu priliku, što čini poslovni plan, kako ga izraditi, i druge povezane informacije.

Dok se autori mogu razilaziti u mišljenju o tome je li moguće razviti kvalitete kao što su inovativnost i poduzetništvo kod mladih ljudi u ranoj dobi u obrazovnome procesu, postoji konsenzus o metodama učenja i poučavanja. Činjenica je da tradicionalni školski predmeti ne omogućuju adekvatan razvoj vještina potrebnih za sudjelovanje u društvu, uključujući i poduzetničke vještine (CIDREE, 1998). Međutim, poduzetništvo se ne može poučavati na krut i znanstven način, stoga Cotton i Gibb (1992) savjetuju mladim ljudima da dožive koncept poduzetništva, a ne samo poduzetništvo. Prevladava uvjerenje da mladi ljudi stječu znanja o tome području na aktivan i eksperimentalan način, što ih upućuje sustavnom razmišljanju i poduzetničkom djelovanju. U prvom je planu učenje kroz rad, koje uključuje iskustva, eksperimentiranje, razmatranje rizika i toleranciju pogrešaka, kreativno rješavanje problema, povratne informacije u društvenoj interakciji, igranje uloga i interakciju sa svijetom odraslih.

Osobito je važno da učenici dožive i razumiju potrebu za korištenjem stečenoga znanja. Oni koji pobjeđuju u svijetu danas nisu ljudi s najvećim znanjem, već oni koji razumiju praktičnu vrijednost i važnost primjene takvoga znanja. Postoje brojne mogućnosti za to preko suradnje s lokalnom zajednicom (Kilpatrick i sur., 2010, Setnikar Cankar i sur., 2013). Ideja je da se programi i konkretne aktivnosti razvijaju putem dijaloga sa zajednicom i svim zainteresiranim sudionicima. To može utjecati na dinamiku razvoja mogućnosti za učenje i stjecanje znanja koje se nudi kroz niz ekonomskih, zdravstvenih, ekoloških, kulturnih, socijalnih i drugih javnih politika. Na toj razini postoji i značajan potencijal za inovacije.

Unatoč povoljnim rezultatima, problem je u činjenici da radionice o poslovanju ne predstavljaju dugoročno rješenje koje će omogućiti promociju inovativnoga ponašanja među mladima. U isto vrijeme, nedavna istraživanja pokazuju da tradicionalne administrativne i korporativne strategije, te primjena poslovnih planova za promicanje razvoja kreativnosti i inovativnosti kod mladih, posebno učenika osnovnih škola, ne daju zadovoljavajuće rezultate (Garavan i O’Cinneide, 1994; Honig i Karlsson, 2004). Navedeni autori naglašavaju promociju kreativnog rješavanja problema (Martin, 2004; Kelley i sur., 2005; Meinel i Leifer, 2011), što je univerzalno korisna vještina, ali i bit poduzetničkoga razmišljanja i djelovanja. To osobito vrijedi za školsku populaciju,

a posljedica toga je da sada tzv. dizajnerski način razmišljanja (Rauth i sur., 2010) zauzima središnje mjesto u osnovnim i srednjim školama (Carroll i sur., 2010). Temelji se na metodama koje su razvijene prilikom kreiranja prakse i ne uključuje samo dizajn proizvoda, već je i načelo službi za razvoj proizvoda, poslovnih modela, mjesta, iskustava i koncepata.

Sušтина je toga načina razmišljanja identificirati stvarne probleme i potrebe pojedinca ili tvrtke i ponuditi njihova konkretna rješenja. Pedagoški pristupi razvoju dizajnerskoga načina razmišljanja u osnovi su u najvećoj mjeri iskustveni, jer učenici razvijaju svoje vještine kroz praktične zadatke, eksperimente i iskustva. Osnovne su komponente metodologije (Rauth i sur., 2010) promatranje i razumijevanje korisnika i društva preko metoda koje se temelje na empatiji, na definiranju problema i generiranju skupa mogućih rješenja, izrada prototipova različitih aspekata tih rješenja i njihovo testiranje koje može biti ili u obliku inovativnih proizvoda ili usluga, procesa, mjesta ili iskustava. Glavna je prednost opisanoga pristupa holizam, koji obuhvaća i korisničke-ljudske i tehnološke i poslovne slučajeve za razvoj rješenja problema i korištenje relevantnih tehničkih i poslovnih alata i vještina. Osim toga, pristup je u znatnoj mjeri usmjeren na korisnika i akciju, pa potiče transfer znanja svih sudionika s ciljem rješavanja problema relevantnih disciplina (Brown, 2008). Pedagogija dizajnerskoga razmišljanja ne poziva na revoluciju u obrazovnom sustavu, ali je dobrodošao dodatak postojećim metodama koje uključuju poduzetničke radionice i druge organizirane oblike poticanja poduzetništva na svim razinama obrazovanja.

## **Zaključci**

U ovome smo istraživanju utvrdili da se inovativno ponašanje učenika koji su godinu dana pohađali poduzetničke radionice statistički značajno poboljšalo. Time je potvrđena hipoteza (H1) da inovacijsko-poduzetničko obrazovanje doprinosi poboljšanju inovativnosti kod učenika. Slični se rezultati također odražavaju na području poduzetničkih vještina, koje su se nakon godine dana znatno poboljšale u svih pet područja specifičnih za inovacijsko-poduzetnički proces. Hipoteza (H2), prema kojoj inovacijsko-poduzetničko obrazovanje pridonosi poboljšanju osnovnih poduzetničkih vještina kod učenika, također je potvrđena.

Rezultati istraživanja ukazuju na to da su poduzetnički krugovi dobar način za promicanje kreativnosti i inovativnosti u školama. Inovacija je aktivnost koja se može naučiti u obrazovanju kojem je cilj poboljšanje temeljnih poduzetničkih vještina i razvoja poduzetničke kompetencije. Iz perspektive održivih rješenja pristupi koji dolaze do izražaja (npr. kreativno razmišljanje i rad) jesu oni koji naglašavaju kreativno rješavanje problema među mladima; navedena sposobnost nije samo univerzalno korisna vještina već je i bit poduzetničkoga razmišljanja i djelovanja. U isto vrijeme, postavlja se pitanje kako osmisliti školski sustav koji će omogućiti svim mladim ljudima ne samo da se bave osnovnim prednostima i nedostacima poduzetničke karijere već također i otvoriti mogućnosti za ozbiljniji angažman s poslovnim sadržajem, osobito među onima koji su posebno zainteresirani za takav sadržaj.