

THE DEVELOPMENT OF ENTREPRENEURSHIP IN INTERDISCIPLINARY STUDY ENVIRONMENT: FIRST ACHIEVEMENTS, HINDRANCES AND PERSPECTIVES

Karine Oganisjana

University of Latvia

Tatjana Koke

University of Latvia

Saemah Rahman*

Universiti Kebangsaan Malaysia

Andra Fernate

University of Latvia

Lucija Rutka

University of Latvia

ABSTRACT

The development of students' entrepreneurship has become one of the contemporary educational topicalities due to its crucial significance as a success factor needed for personal fulfilment, active citizenship, social cohesion, employability and competitiveness. However very often formal education lacks the experience of teaching and learning for real life and therefore students mainly perceive studies as means for passing exams and getting certificates, considering schooling as something remote from the needs of real life. This study aimed to develop a pedagogical strategy to promote entrepreneurial culture among students at school level. A qualitative approach was employed to explore how entrepreneurial culture can be nurtured and develop using an interdisciplinary approach. This holistic interdisciplinary teaching and learning entrepreneurship promoting methodology (HIEPTLM) was conducted with 116 teachers and 160 students from five secondary schools in Latvia. Both teachers and students' reflections were registered in electronic learning diaries which were analysed using a qualitative content analysis. The results of the study give evidence of the appropriateness of the holistic interdisciplinary entrepreneurship promoting teaching and learning methodology for developing teachers and students' entrepreneurship in study process and electronic diaries as research and learning tools. Results of the study recommend the use of an interdisciplinary study environment to facilitate the development of students' entrepreneurial culture.

Keywords: Entrepreneurship Development; Interdisciplinarity; Holistic Education; Electronic Learning Diaries.

* Corresponding author: Saemah Rahman, Professor, Department of Innovation in Teaching and Learning, Faculty of Education, Universiti Kebangsaan Malaysia, 43000 Bangi, Selangor, MALAYSIA. Tel: 603-89216456, email: saemahukm@yahoo.com

1. INTRODUCTION

Literature analysis showed that the researches in entrepreneurship lack a common platform of comprehension on the matter of entrepreneurship and there are a great number of competing contradictory theories. Having studied the nature of the paradoxes and contradictions, it is concluded that entrepreneurship is a system to be comprehended, researched and developed as a whole (Oganisjana, 2010a). As a result, a holistic interdisciplinary entrepreneurship promoting teaching and learning methodology (HIEPTLM) which encompasses the potential of all study disciplines was elaborated and tried out. This paper shows a principally different approach from other literature on promoting entrepreneurship with its holistic view on this process – it doesn't substitute the development of entrepreneurship by the development of its separate components such as risk taking, achievement motivation, social and organisational skills, etc. Instead, it offers the development of entrepreneurship as a whole while teachers and students participate in the process of creating new values in interdisciplinary study environment which is brought more in line with the processes which takes place in real enterprises. The aim of this paper is to reveal the nature of HIEPTLM and analyse the results of the implementation of this methodology for developing teachers and students' entrepreneurship.

1.1. The Holistic Nature of Entrepreneurship

The ambiguity and confusion in the comprehension of the matter of entrepreneurship has a conceptual character; it is defined as a process (Schumpeter, 1934; Drucker, 1993); individual's different qualities, skills, abilities & traits (Kearney, 1999; Brockhaus, 1982); behaviour (Stevenson, 2000); and combination of individual's behaviour and different qualities (Gibb, 2007; Hollenbeck & Whitener, 1988; Herron & Robinson, 1993). Having analysed the contradictions and varieties of theories and approaches based on economics, management, psychology, sociology and anthropology, it was concluded that entrepreneurship is a system and it has to be comprehended and developed holistically (Oganisjana, 2010a; Oganisjana & Matlay, 2012).

In respect with the theory of holism by Jan Smuts, to treat and comprehend entrepreneurship as a system, there were two things to be carried out: (i) to determine the components of entrepreneurship, and (ii) to research and reveal the character of links among its components and show in what way they function together as a whole (Smuts, 1927). The components of entrepreneurship: personality traits, motivation, cognition, needs, emotions, abilities, learning, skills and behaviour, as well as criteria and indicators which characterise entrepreneurship were determined using qualitative content analysis of a text composed of fifty interpretations of the concept of entrepreneurship (Oganisjana, 2010a,b). The coding was realized according to Phillip Mayring's "Step model of inductive category development" (Mayring, 2000); the coded data were processed with AQUAD 6.0 (Huber & Gürtler, 2004). The content analysis revealed more components for entrepreneurship than knowledge, skills and attitude; that is more in line with what David McClelland understands by competence, comparing it with an iceberg with a person's knowledge and skills representing the visible tip of the iceberg while the underlying and enduring personal characteristics of self-concepts, traits and motives which represent the larger portion of the iceberg, hidden below the waterline (McClelland, 1973). Concerning behaviour as a component of competence, Carlsen (2009) emphasised the

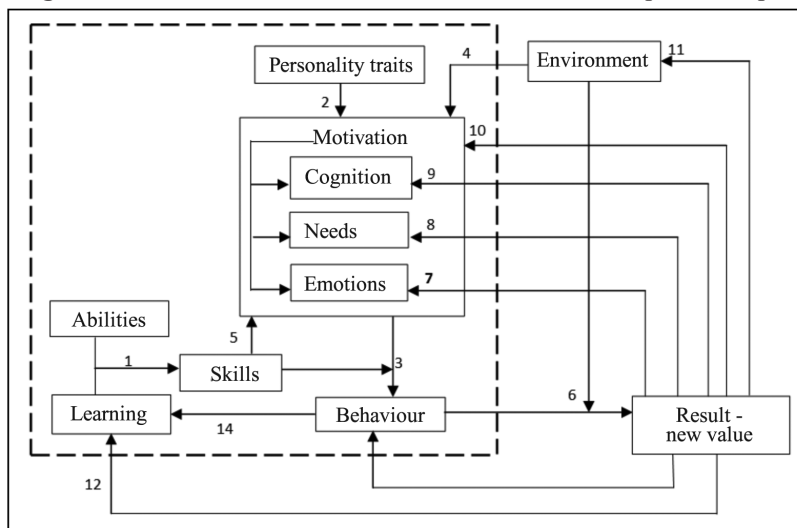
necessity of complementing the concept of competence with behaviour taking into account its active side in achieving the goals set.

The revelation of the character of causal interconnections among the entrepreneurship components enabled to elaborate "The holistic structural functional model of entrepreneurship" (see fig. 1). Entrepreneurship with its nine components is located within the dashed lined box. The holistic structural-functional model of entrepreneurship" shows not only the structure and links between the components of entrepreneurship but as well reveals in what way: (i) entrepreneurship components interact and function together as a system; (ii) students can learn holistically in study process becoming more entrepreneurial; (iii) new values are created; the latter is the key determinant of entrepreneurship (Schumpeter, 1934; Drucker, 1993; Singer & Bloch, 1990). This will be demonstrated considering the biggest learning cycle: "Environment" → "Motivation" ("Cognition", "Needs", "Emotions") → "Behaviour" → "Results" → "Environment".

When the **environment** offers an opportunity, an individual may become **motivated** to realize it, owing to his certain **personality traits** and evaluating the idea and all the aspects of the context using his power of **cognition**, then comparing the potential outcomes with his own **needs** and finally accepting it **emotionally** (Reeve, 2001).

Then certain **behaviour** follows which is mediated by motivation (Hollenbeck & Whitener, 1988), moderated by skills (Herron & Robinson, 1993; see point 3 in fig. 1); skills like an adjuster may intensify behaviour if they are appropriately developed for realizing the goal, or, on the contrary, hold back from active behaviour if skills aren't sufficiently developed for it. In their turn skills are formed by **learning** and training of an individual's **abilities** which he/she is gifted with by nature (Herron & Robinson, 1993; see link 1 in fig.1). Behaviour may

Figure 1: The holistic structural functional model of entrepreneurship



Source: Oganisjana, 2010a, p.60

bring to certain **results**, which ought to be new economic values (Schumpeter, 1934; Drucker, 1993; Singer & Bloch, 1990). The results are tested and evaluated in real life conditions (**environment**), and the reflection of the course of the individual's actions while creating that value may cause new motivation, cognition, needs and emotions (see links 7,8,9,10 in fig 1), which change the person.

This is what Peter Jarvis calls experiential reflective action learning, which, along with producing new skills and knowledge, can additionally be accompanied by other forms of learning involving attitudes, emotions and so on (Jarvis et al., 2003, p. 64). Based on these findings entrepreneurship was defined holistically as follows:

Entrepreneurship is a dynamic system of individual's causally interrelated personality traits, motivation, cognition, needs, emotions, abilities, learning, skills and behaviour; on the basis of which an individual interact with the environment for identifying, generating and realizing opportunities into new values
(Oganisjana, 2010a, p.64)

1.2. The nature of the holistic interdisciplinary entrepreneurship promoting teaching and learning methodology (HIEPTLM)

Entrepreneurship education comprises two principal aspects: the first one encompasses a broader view of education which is oriented to the development of students' entrepreneurial attitudes and skills but is not directly oriented to the creation of a new enterprise (Bikse, 2009; Kearney, 1999); the second one concerns the development of entrepreneurship competence in educational process accompanied with: the creation and management of a new enterprise; playing entrepreneurial games (Caird, 1993); attending student business clubs and regular campuses (Tan & Ng, 2006) or industrial visits and participation in a real enterprise (Antonites & Van Vuuren, 2005).

However taking into account the fact that in schools students spend most of their time learning different study disciplines, in this project it was decided to use all the joint potential of the school subjects to make students think, perceive, feel, treat and act in a more entrepreneurial manner – that is to develop students' entrepreneurship as a core competence. HIEPTLM elaborated for the realization of this task is founded on the following four pillars.

(i) Holistic perspective

HIEPTLM was elaborated based on “The holistic structural functional model of entrepreneurship” which shows that the development of students' entrepreneurship doesn't imply the development of its components separately. There is a point of view that it's possible to develop students' entrepreneurship while learning almost any study discipline, if students are encouraged to combine and unite holistically theory with practice (Heinonen, 2007; Hannon, 2006) and carry out theory-based activities (Fiet, 2000) for solving real life problems and creating innovative values as it was shown in the biggest learning "Environment" → "Motivation" ("Cognition", "Needs", "Emotions") → "Behaviour" → "Results (New value)" → "Environment", their entrepreneurial potential grow as a whole.

(ii) Interdisciplinarity

As life is not mono-disciplinary, entrepreneurship learning can't be framed within separate-discipline study environment either. It should be embedded across and within different subjects. Hannon argues that the codification of knowledge into distinct "subjects" creates challenges for cross-disciplinary notions of entrepreneurship as a state of being, or as a process of change or development. When subjects are translated into formalised courses for teaching, they are often "full" of subject "content". Enterprise or entrepreneurship outcomes largely remain peripheral (Hannon, 2006). Therefore training for entrepreneurship by necessity must actively deal with the multiplicity of becoming, which is life, by sensitive conversations with local situations (Hjort & Johannisson, 2007). For that it is essential to build interdisciplinary learning environment, build projects and programmes across disciplines (Wilson, 2008) and make students members of cross-curricula teams (Shacklock et al., 2000). Allan Gibb raises the question even in a broader context saying that entrepreneurship should be taken out of the "locker room of economics", and based "within a wider interdisciplinary context with a pluralistic and diffused view of society" (Gibb, 2002).

(iii) Experiential learning by doing

Researchers in the field of entrepreneurship education argue that the most effective way to promote students' enterprise is to organise studies like entrepreneurship process (Tan & Ng, 2006; Kearney, 1999; Hjorth & Johannisson, 2007), in which students ***learn by doing*** (Howell, 1994; Cusins, 1996) and ***reflecting*** (Fiet, 2000; Heinonen, 2007; Wing, 2006), ***based on their experience*** (Hjorth & Johannisson, 2007; Rae & Carswell, 2000). Mistakes here are not perceived as something to avoid but as a source of new enhanced experience to learn from (Antonites & Van Vuuren, 2005; Koo, 1999).

(iv) Framework of attributes of entrepreneurship promoting study process

Depending on the character of interrelation among the participants of study process, it can be "Entrepreneurship restraining" or "Entrepreneurship promoting" (Gibb, 1993; Braun, 2008; Kearney, 1999). HIEPTLM is based on the framework worked out by systemizing the attributes of "Entrepreneurship promoting" study process: 1) emphasis - on knowing how; 2) delivery - process-driven; 3) method of teaching and learning – experiential, reflective; 4) control – student-directed, negotiated; 5) teacher's role – facilitator, colleague, coordinator; 6) student's role – active, generative, inquisitive; 7) students' activity - working in small groups; 8) student's status - asset/can help; 9) student's expectation – independence; 10) ethos – social, democratic, collaborative; 11) lessons – flexible, opportunist; 12) mistakes - to be learned from; 13) assessment – for learning and recognition; 14) view of the world - uncertainty, shades; 15) determined by - local needs; 16) staffed by - cross curriculum team; 17) working with others – planned, frequent; 18) aim - practice into theory; 19) outcomes – lifelong (Gibb, 1993; Braun, 2008; Kearney, 1999; Wing, 2006; Hjort & Johannisson, 2007).

2. METHODS

2.1. *Research Design*

This study employs a qualitative participatory action research design which is meant for bringing in positive changes and evaluating them. The aim of the study is: (i) to improve action and involve the participants of the research in the action research and changes; (ii) to analyse the effectiveness of different activities while solving real life interdisciplinary problems aimed at the development of entrepreneurship of the participants.

2.2. *The participants*

The study involved 116 teachers and 160 students from five secondary schools in Latvia. Latvia is one of the three Baltic States which joined the European Union in 2004 after its more than 50 year-long Socialist past where there wasn't any private property; accordingly, a priori there couldn't be any entrepreneurship. Then the main educational goal was to shape and develop the builder of Socialism which meant that after getting their education, students' destiny was pre-determined to work for some state organisation till the end of their lives and to implement tasks set by state authorities. After regaining its independence and joining the space of the European Union States, Latvia faced a new challenge – to learn and teach to live in new economic and political conditions, to develop its citizens' entrepreneurship, competitiveness and independent critical thinking and attitude of openness to changes and innovation. Therefore in the course of Karine Oganisjana's PhD research, theory based interdisciplinary teaching and learning principles, methods and materials were elaborated and tested for promoting entrepreneurial skills, attitude, thinking, behaviour and mindsets of teachers, students and learners of all ages. After a pilot testing of HIEPTLM in one of the secondary schools of Riga, the capital of Latvia, it was decided to conduct a broader and deeper research encompassing as well the regions of Latvia to be sure that the success of HIEPTLM is not conditioned by the peculiarities and broader possibilities of schools in the capital city vs. schools in the regions. That was realised as part of European Social Fund project "Support to Researches in Education" (*"Atbalsts izglītības pētījumiem"*) in collaboration with ASEM, "Asia–Europe Meeting" Lifelong Learning Research HUB within the research "The Development of Teachers' Professional Competence in Interdisciplinary Study Environment for Linking Learning to Real Life and Promoting Students' Entrepreneurship". The schools were chosen to conduct five case studies in all the four regions and the capital of Latvia: Bebrene Secondary School (the region of Latgale); Pludonis Kuldīga Gymnasium (the region of Kurzeme); Cesis Secondary School Nr. 2 (the region of Vidzeme); Jelgava Secondary School of Technologies (the region of Zemgale) and Riga Jugla Secondary School (Riga) (see the map of Latvia and its regions in fig. 2).

These are ordinary secondary schools. The participants of the research were chosen randomly, one class from each school. However, in the beginning of the project all the students were to be in form 10 and the teachers had to be the ones who taught them. For the convenience of the schools, the interdisciplinary studies were organised in each school separately which means that the project team from the University of Latvia had to visit the schools and organise all the activities in the school premises. As it is not a formal educational programme in Latvia, both the teachers and students hadn't attended any similar entrepreneurship promoting programmes

before the project and didn't have such an experience. The first stage of the project had three phases: (i) the project team worked only with teachers who had to solve, analyse and comprehend the essence of interdisciplinary (ID) tasks and the principles of their creation as well as to understand how ID study environment may promote teachers and students' entrepreneurship; (ii) the teachers elaborated HIEPTLM lessons in mixed teachers' teams of traditionally remote study disciplines; (iii) teachers worked with students and tried out their own HIEPTLM lessons created in phase 2. By the end of the stage of the project sufficient data and evidence were accumulated for judging about the impact of HIEPTLM on the teachers' professional competence of creating and working in interdisciplinary study environment and students' achievements both in formal studies and entrepreneurial field.

Figure 2: The map of Latvia and its regions



Source: www.kartes.lv

2.3. Instrumentation

The HIEPTLM studies in all schools started with the electronic semi-structured interviews on interdisciplinary learning and teachers' analytical competence. Along with questions about gender, age, occupation, code assigned, work experience, pedagogic work experience and region, the teachers commented on some aspects of interdisciplinary learning and answered the questions such as: "What is interdisciplinary learning?", "What is interdisciplinary thinking?", "How should interdisciplinary problems be solved?", "Describe your most significant professional experience", "Describe your most significant learning experience". The same questionnaire is offered to the teachers as well in the end of HIEPTLM studies in order to analyse the changes which took place in teachers' comprehension of interdisciplinary learning and analytical competence.

The qualitative data on HIEPTLM were collected in the end of each learning cycle offering teachers and students to reflect on their achievements and hindrances in the course of studies in electronic learning diaries. The contents of the electronic diaries: "Teachers' professional competence development diary" and "Students' entrepreneurship development diary" were elaborated by Andra Fernate and periodically fulfilled by the research team and sent to schools electronically using "Google on-line documents" service. The respondents filled them in sharing their opinions in their school's IT classroom and submitted, thus providing the acquisition of qualitative data. As the study content was the same in all the five schools, as well the statements and questions in the electronic diaries were mainly the same in each learning cycle. Along with the personal information about gender, age, teaching experience (in years, for teachers only), codes assigned (teachers' codes were A and students' - B), work experience (in years), country and district, teachers and students shared their reflection on the HIEPTLM various aspects. Most questions and aspects were common for teachers and students which includes: "What theme was considered today?", "Are you satisfied with today's activities?", "Today I managed to...", "Today I liked ...", "I have realised that for me it is difficult to ...", "Today I didn't manage to ...", "... helped me today", "In the next activities I would like to change...", "What has changed in your theoretical view on interdisciplinary teaching and learning?", "What has surprised you in today's activities?", "How did you work together?", "Explain how you arrived at the solution of problems during today's activities.", "Before solving a task I ...", "How will you use in real life what you acquired in today's interdisciplinary activities?"

There were only two aspects that are different for teachers and students which explained their status and role. For teachers: "Describe the most important professional experience which you acquired in today's activities" and "Describe the most important interdisciplinary learning experience which you acquired in today's activities". Correspondingly students were offered to comment on: "Describe the most important practical experience which you acquired in today's activities" and "Describe the most important learning experience which you acquired in today's activities".

The learning diaries provided a timely feedback for analysing, updating and improving HIEPTLM. Thus the diaries are used for learning and teaching and for researching (Gleaves, et al., 2008; Prinsloo, et al., 2011). In the course of the research the learning diaries were updated and used flexibly; and they were considered with a teacher or a student who had difficulties with the understanding of the meaning of the questions. As a result some questions were reworded.

2.4. Data Collection

Data were collected using Semi-structured electronic interview on the essence of interdisciplinary learning and analytical competence of working in interdisciplinary study environment from October 2011 to March 2012. The semi-structured electronic interview was organised with the teachers twice: in the beginning of the HIEPTLM learning in order to find out in what way they comprehend the essence of interdisciplinary learning and get informed about their analytical competence of working in interdisciplinary study environment and in the end of the HIEPTLM learning for judging about the changes which took place owing to this course.

Teachers were trained to analyse, solve and create HIEPTLM problems. In the end of each training cycle teachers reflected on what they acquired in the study process filling in electronic learning diaries. After each reflection the diaries were analysed and corresponding changes were carried out in the next lessons taking into account teachers' opinions, wishes and difficulties they faced.

For creating HIEPTL lessons, the teachers (22-25) in each project school were divided into three mixed multidisciplinary teams of teachers of traditionally remote study disciplines (e.g. physics, literature, music, history, biology, handicraft and sports); the more independent the study disciplines seem, the higher the creativity potential of the team is. After the creation of the content of the HIEPTL lessons and working out attractive modern forms of their realization, as well as having elaborated the assessment system, teachers' teams were ready to face the new challenge of working with their students using HIEPTLM.

One or two classes from each school were chosen for the participation in the research. That means that the same students worked for three days, each day having one HIEPTL lesson with one of the teachers' teams. In the end of each lesson also students reflected on different aspects of the HIEPTL lesson in the electronic diaries for students. By April 2012 the electronic diaries have been filled in by 116 teachers (each teacher five times) and 160 students (each student three times).

2.5. Data Analysis

Data were analysed using a qualitative content analysis with open coding of the texts of reflection taken from the electronic diaries of the participants. To reveal the main tendencies of the approach and the first achievements, hindrances and perspectives, the answers to each question were sub grouped according to the meaning, and interpreted in order to get active feedback for the timely update of the teaching and learning methodology. Further deeper qualitative content analysis of the reflection text was conducted to disclose the interconnections and mutual impact of different aspects of HIEPTLM using as conceptual codes the components, criteria and indicators which characterise entrepreneurship (see table 1).

Table 1: The components, criteria and number of indicators (shown in brackets) which characterise entrepreneurship

Components of enterprise	Criteria characterising enterprise
Personality traits	Purposefulness (6) Openness to the real life challenges (7) Analytical capabilities (5)
Abilities	Creativity (6) Abilities to deal with difficulties (6) Organisational skills (5)
Skills	Social skills (5) Problem solving skills (6)

Table 1: The components, criteria and number of indicators (shown in brackets) which characterise entrepreneurship (*cont*)

Components of enterprise	Criteria characterising enterprise
Learning	Experiential learning (3)
Motivation	Achievement motivation (7)
Emotions	High emotional stability (3)
Needs	Need for self actualization (4) Need for appreciation (3) Thinking (9)
Cognition	Self concept (4) Attitudes (5)
Behaviour	Opportunity identification and new idea generation (6) Realization of opportunities and the generated ideas (7) Orientation in changing environment (6)

Source: Oganisjana, 2010a

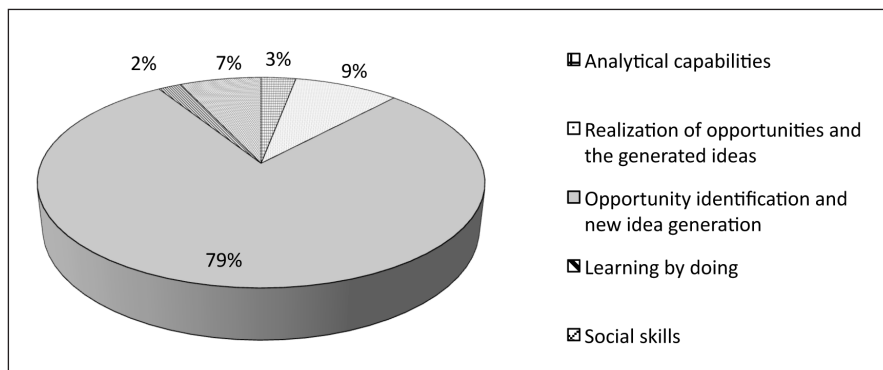
As this paper mainly focuses on the data analysis using the components and criteria of entrepreneurship, the indicators are not mentioned in table 1. The results of the qualitative content analysis of the texts of the teachers and students' reflections were processed both quantitatively ending with the constructing and analysing of the frequency tables of conceptual codes and qualitatively creating and analysing linkages among the categories.

3. FINDINGS AND DISCUSSION

As the electronic learning diaries of teachers and students were systematically analysed for getting the flexible feedback and carrying out the changes needed, certain tendencies and accents have already been crystallized out of the reflections. The open coding of the texts concerning: "Today I managed to...", "Today I liked ...", "Today I didn't manage to ...", "How will you use in real life what you acquired in today's interdisciplinary activities?" gives the first insight into the development of entrepreneurship.

The teachers concluded that they managed to comprehend the essence of HIEPTLM and the principles of the creation of interdisciplinary (ID) activities. They also emphasised that they had successfully collaborated with their colleagues, students and the project team, being creative and getting real satisfaction from the process of work. Concerning the question on how they will use in real life what they acquired in that day's interdisciplinary activities, the teachers' answers revealed that "Opportunity identification and new idea generation" made the bulk (79%) among all other categories. Though "Realization of opportunities and the generated ideas" (9%) and "Social skills" (7%) also emerged to make the basis of what teachers will use in real life (see fig. 3).

Figure 3: The categories which emerged from teachers' answers to the question "How will you use in real life what you acquired in today's interdisciplinary activities?"



However teachers consider that while creating their own ID activities in teams with colleagues and working with students based on these ID activities, they didn't manage to realize certain elements on the level they wanted to. But this is a normal practice in the beginning of acquiring any new approach.

The teachers highly evaluated the multifaceted collaboration with colleagues, students and the project team; the personality and professionalism of the project team; the content and variety of forms of the ID studies; their own activities and the responsive and creative atmosphere. The teachers' special appreciation concerned the discovery of good qualities in their colleagues and even more in their students which they couldn't have expected before. The teachers mentioned that: 1) they liked their students' positive attitude, involvement, discipline and attractiveness; 2) they were satisfied with the peace in the overall working atmosphere and the diligence of their students; 3) they saw sincere joy in teachers and students' eyes; 4) they appreciated the result of students' creative work and presentations; 5) the students were rather creative and quick-witted and 6) both the teachers and the students appreciated each other's work and thanked for cooperation, which was a new phenomenon in their school practice.

As for the students, they reported that they managed to comprehend their teachers' ID problems and solve them in teams with their classmates. Though, several students consider that they couldn't cope with certain creative tasks in full due to the lack of knowledge in definite study disciplines. Some of the students concluded that in some situations it was difficult to get organised or find the information needed for solving the problems put forward. The majority of the students mention that they liked: 1) the collaboration with their classmates and teachers; 2) the content and forms of the ID activities/studies; 3) the most favourable, creative and friendly atmosphere; 4) the opportunity to come out of traditional study frames and go into the community to solve real life problems contacting as well people other than their teachers; 5) to work in a way different from what they do in usual lessons; 6) to reveal the inner connections between study disciplines which seem to be independent; 7) the practical, creative and research tasks; 8) to be involved in different role games, etc.

The qualitative content analysis showed that in their reflections students more often spoke about such categories as: social skills, creativity, analytical capabilities, opportunity identification and new idea generation, experiential learning and learning by doing. For better perception the distribution of conceptual code frequencies in students' reflections among the five schools are given in two separate diagrams (see fig. 4 and 5)

Figure 4: The distribution of frequencies of the conceptual codes in students' reflections among the schools (shown as corresponding regions).

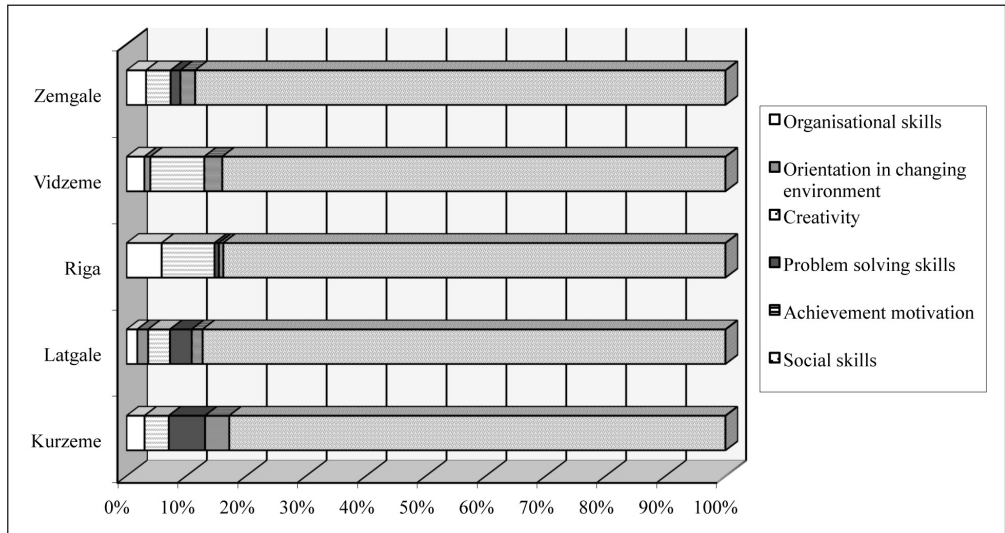
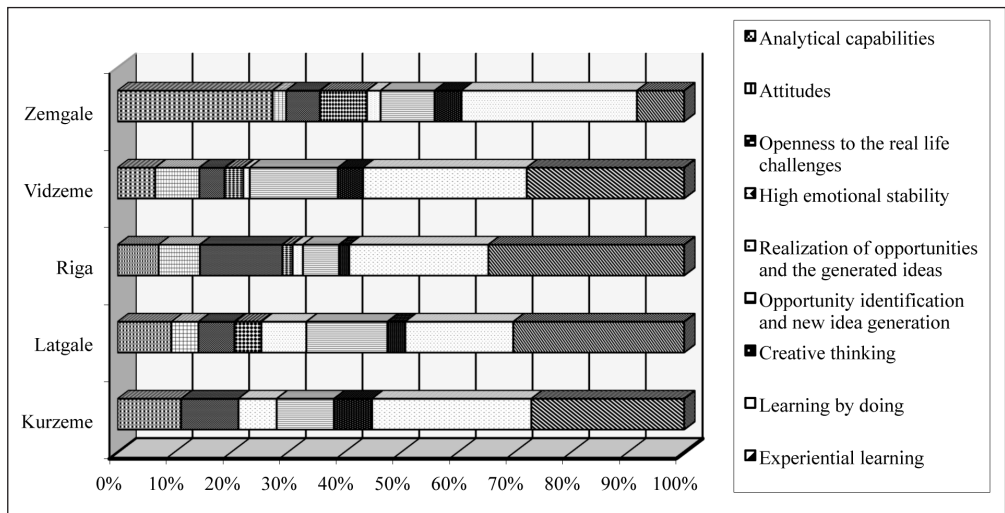


Figure 5: The distribution of frequencies according to the conceptual codes in students' reflections among the schools (shown as corresponding regions).



The analysis of the linkages among the categories revealed interconnections among: (i) students' problem solving skills and opportunity identification and new idea generation; (ii) opportunity identification and new idea generation, learning by doing and analytical capabilities; (iii) realization of opportunities and the generated ideas, creative thinking and experiential learning which in its turn is connected with opportunity identification and new idea generation.

However there were certain difficulties in the work with students – the teachers were so much excited and involved in the process of the realization of their HIEPTL lessons that sometimes they forgot about breaks. As a result, students got tired since these ID activities require much more intensive work from students than traditional lessons at school where the main role and responsibility belong to the teacher. Students as well would like to have more physical activities rather than sitting in front of the computers for a long time for conducting theoretical research.

The answers to the question: "Are you satisfied with the lesson?" show that 50% of teachers are very satisfied; 38% - satisfied; 11% - rather satisfied that not satisfied and only 1% - rather not satisfied than satisfied with HIEPTL. As for the students, 39% of them are very satisfied; 47% - satisfied; 11% - rather satisfied that not satisfied and 3% - rather not satisfied than satisfied.

Having analysed some more aspects of the teachers' reflections, the results of the first stage of the research were systemized into three distinct phases as shown in table 2. It shows that the scope of teachers' collaboration; the values created for themselves and others; the aspects of the HIEPTL which they liked and the emotions and feelings which they experienced, depend on the objectives set and the character and content of the teachers' activities. While participating in the first stage of the research, teachers managed to acquire knowledge (phase 1), develop skills (phase 2) and form positive attitude to HIEPTLM, appropriate behaviour, new motivation and needs (phase 3). That means they developed all the elements of entrepreneurship. As for the students, the growth of their entrepreneurship doesn't have such distinct phases; as they participated only in the third part of the activities when the teachers had to try out their entrepreneurship promoting interdisciplinary activities, preliminary having already passed through the two previous phases of the work of learning to create and creating these interdisciplinary activities.

The holistic interdisciplinary entrepreneurship promoting teaching and learning methodology (HIEPTLM) which provides the opportunity for solving real life problems and creating new values for oneself and others is appropriate for developing both teachers and students' entrepreneurship in study process, since both teachers and students: liked and evaluated the HIEPTL activities very positively; coped with them rather successfully; managed to collaborate with each other at a more advanced level than before and decided that these studies are valuable and should become a part of regular study process. Electronic learning diaries are appropriate learning and research means for HIEPTLM as they provide flexible feedback with the participants of the study and research process.

However it should be mentioned that the creation of HIEPTL lessons encompasses certain hidden hindrances: firstly, it is a time-consuming process due to ID complexity and innovative character for teachers who don't have much HIEPTL experience in the beginning. Secondly,

there are little incentives for teachers to spend their time and effort for creating different teaching and learning environment. Thirdly, teachers express their worries whether inspecting institutions will be prepared to appreciate and see educational value of flexible atmosphere of ID activities. Finally, teachers express their worries about high intensity of students' work on ID tasks which they are not accustomed to. These hindrances can be removed rather easily if this approach to studies becomes a norm of the educational system and ample amount of HIEPTL problems and lessons are accumulated in schools for being used and exchanged among schools.

Special attention should be paid to the proper organisation of students' work and rest in order not to overload them as this type of studies require more attention, concentration, creativity and intensive work of students than in traditional lessons.

Table 2: The three phases of the development of teacher's entrepreneurship as a core competence in the first stage of the project

Phase	The objectives for the teachers	The new value created by the teachers	The teachers appreciated ...	Emotions and feelings experienced by the teachers
1.	To solve, analyse and comprehend the essence of ID tasks and the principles of their creation; to understand how ID study environment may promote teachers and students' entrepreneurship	New knowledge of creating ID study environment which is maximally driven closer to real life situations and problems.	<ol style="list-style-type: none"> 1. The ID tasks and the study content offered by the project team. 2. The new opportunity of working in the ID study environment which is very close to real life situations. 3. The professionalism of the project team. 4. The friendly, democratic and positively charged atmosphere of the training and how it was organised. 	Professional curiosity and interest caused by the new HIEPTLM approach to studies.
2.	To elaborate HIEPTLM lessons in mixed teachers' teams of traditionally remote study disciplines	New skills in identifying seemingly unrelated links between things, processes and phenomena from different study disciplines for creating ID tasks; new level of social skills in collaborating	<ol style="list-style-type: none"> 1. The new type of cooperation with colleagues: creative ideas, sense of belonging, support and togetherness. 2. The process of discussion and analysis of the 	Creative doubts and satisfaction while creating ID lessons in mixed teams of colleagues.

Table 2: The three phases of the development of teacher's entrepreneurship as a core competence in the first stage of the project (*cont*)

Phase	The objectives for the teachers	The new value created by the teachers	The teachers appreciated ...	Emotions and feelings experienced by the teachers
		with colleagues of traditionally independent study disciplines.	content and forms of realization of the newly created ID tasks; pedagogical provocations.	
			3. The recommendations given by the project team.	
3.	To try out the HIEPTLM lessons created in phase 2 while working with students and analyse the results	New ID tasks which have already been tried out in work with students and will be useful as well for other teachers in Latvia and other partner countries; new experience, attitude, behaviour, needs and motivation for working in a richer ID than in traditional separate discipline study environment.	1. The team work with colleagues while realising their ID lessons in practice with students. 2. The great interest, enthusiasm, positive attitude, discipline, creativity and attractiveness of students while working in the new ID environment. 3. The creative results of students' work.	Inspiration and positive emotions got from the work with students while trying the HIEPTLM lessons created in phase 2.

The theoretical bases and practical implementation of HIEPTLM and the research methodology were presented in the Faculty of Education of Kebangsaan Universiti, Malaysia, ASEM partner of the University of Latvia. It showed that there is a common interest between UKM and the University of Latvia to start collaboration in both elaboration and implementation of teaching and learning technologies on the one hand, and comparative research in HIEPTLM, on the other hand. In order to have similar grounds for comparative collaborative research in developing entrepreneurship in the Latvian and Malaysian schools, HIEPTLM as well as the English version of the electronic diaries were shared with the partners from the National University of Malaysia. UKM Prof. Saemah Rahman decided that the electronic diaries for teachers and students would be complemented with the three more aspects of meta-cognitive thinking and acting in ID environment: "How did you work together?", "Explain how you arrived at the solution of problems during today's activities." and "Before solving a task I ..." for the research to be conducted in Malaysian schools.

Though HIEPTLM approach hasn't been integrated into the educational system of Latvia yet, there is sustainable interest towards it owing to its topicality and the first results obtained in the course of the project. At the moment this course fulfilled within the project is broadly demanded and offered within teachers' further education courses in Latvia and in the nearest future it is planned to be shared with our European colleagues both in secondary school and university level.

4. CONCLUSION

Education for entrepreneurship is traditionally associated with working in enterprise and being involved in the entrepreneurial process. The approach analysed in this paper has another focus on the issue. As students spend most of their time at lessons for acquiring knowledge in different study disciplines and developing certain sets of skills, it was decided to elaborate such a participatory action research based teaching and learning methodology which would combine the potential of all study disciplines in order to link the study process to real life situations and make students deal with them. When students analyse problems taken from their environment and try to solve them in small collaborative groups of peers, facilitated by teachers for creating some new valuable solutions, they participate in a process which is similar to what takes place in real enterprises. In the further stage of the project this process will be moved even closer to that as students will get more involved by creating values commercialization.

REFERENCES

- Antonites, A. J., & Van Vuuren, J. J. (2005). Inducing entrepreneurial creativity, innovation and opportunity – finding skills. *SAJEMS NS*, 8(3), 255–271.
- Bikse, V. (2009). *Pētījums "Latvijas progress uzņēmējdarbības izglītības attīstībā pēc iestājas Eiropas Savienībā*. (Research "The Progress of Latvia in the Development of Entrepreneurship Education after Joining EU") Rīga: Latvijas Universitāte, Ekonomikas un vadības fakultāte, Eiropas Komisijas pārstāvniecība Latvijā.
- Braun, G. (2008). Evaluating international entrepreneurship education programmes: Lessons from experience. In G. Braun, P. Kyrö & S. Speer (Eds.), *Evaluating, experiencing and creating entrepreneurial and enterprising networks* (pp. 93–112). Teper.
- Brockhaus, R. (1982). The psychology of the entrepreneur. In C. A. Kent, D. L. Sexton & K. H. Vesper (Eds.), *Encyclopedia of entrepreneurship* (pp. 39–57). Englewood Cliffs, N.J.: Prentice–Hall.
- Caird, S. P. (1993). What do psychological tests suggest about Entrepreneurs. *Journal of Psychology*, 8(6), 11–20.
- Carlsen, A. (2009, 19 June). *Speech at ASEM LLL HUB network 4 "National strategies of Lifelong Learning" meeting of coordinators*. Riga: University of Latvia.
- Cusins, P. (1996). Action learning revisited. *The Journal of Workplace Learning*, 8(6), 45–53.
- Drucker, P. (1993). *Innovation and entrepreneurship*. New York: Harper Business.

- Fiet, J.O. (2000). The pedagogical side of entrepreneurship theory. *Journal of Business Venturing*, 16(2), 101–117.
- Gibb, A. A. (2002). Creating conducive environments for learning and entrepreneurship: Living with, dealing with, creating and enjoying uncertainty and complexity. *Industry & Higher Education*, 19(3), 135–148.
- Gibb, A.A. (1993). The enterprise culture and education: Understanding enterprise education and its links with small business. *International Small Business Journal*, 11(3), 11–34.
- Gibb, A.A. (2007). Enterprise in education. Educating tomorrow's entrepreneurs.
- Gleaves, A., Walker, C. & Grey, J. (2008). Using digital and paper diaries for assessment and learning purposes in higher education: a case of critical reflection or constrained compliance. *Assessment & Evaluation in Higher Education*, 33(3), 219–231.
- Hannon, P. D. (2006). Teaching pigeons to dance: sense and meaning in entrepreneurship education. *Education and Training*, 48(5), 296–308.
- Heinonen, J. (2007). An entrepreneurial-directed approach to teaching corporate entrepreneurship at university level. *Education and Training*, 49(4), 310–324.
- Herron, L., & Robinson, R. (1993). A structural model of the effects of entrepreneurial characteristics of venture performance. *Journal of Business Venturing*, 8C, 281–294.
- Hjorth, D., & Johannisson, B. (2007). Learning as an entrepreneurial process. In A. Fayolle (Ed.), *Handbook of research in entrepreneurship education* (Vol. 1, pp. 46–67). Cheltenham, UK: Edward Elgar Publishing.
- Hollenbeck, J., & Whitener, E. (1988). Reclaiming personality traits for personnel selection: Self-esteem as an illustrative case. *Journal of Management*, 14(1), 81–91.
- Howell, F. (1994). Action learning and action research management education and development. *The Learning Organisation*, 1(2), 15–22.
- Huber, G., & Gürtler, L. (2004). *AQUAD 6. Manual for the analysis of qualitative data*. Tübingen, Germany: Ingeborg Huber Verlag
- Jarvis, P., Holford J., & Griffin, C. (2003). *The theory & practice of learning* (2nd edition). London: Routledge Falmer.
- Kearney, P. (1999). *Enterprising ways to teach & learn. Book 1. Enterprise principles*. West Hobart, Australia: Enterprise Design Associates Pty Ltd.
- Koo, L. C. (1999). Learning action learning. *Journal of Workplace Learning*, 11(3), 89–94.
- Mayring, P. (2000, June). Qualitative content analysis [28 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research Theories*, 1(2). Retrieved 24 July, 2008, from <http://www.utsc.utoronto.ca/~kmacd/IDSC10/Readings/text%20analysis/CA.pdf>
- McClelland, D. (1973). Testing for competence rather than for “intelligence”. *American Psychologist*, 2, (1-14).

- Oganisjana, K. (2010a). The Development of Students' Enterprise in Study Process" („Studentu uzņēmības veicināšana studiju procesā"). (Doctoral Dissertation, University of Latvia). Retrieved 6 February, 2012, from <http://luis.lanet.lv/pls/pub/luj.fprnt?l=1&fn=F1648681065/KarineOganisjana2010.pdf>
- Oganisjana, K. (2010b). Researching entrepreneurship and complementing it with entrepreneurial behaviour triggering components. *Trends of Economics and Management*, 4(6), 27–37.
- Oganisjana, K., & Matlay, H. (2012). Entrepreneurship as a dynamic system: A holistic approach to the development of entrepreneurship education. *Industry & Higher Education*, 26(3). London, UK: IP Publishing Ltd
- Pentti Mankinen 2007, 1-19. Retrieved 10 June, 2008 from. <http://www.enorssi.fi/hankkeet/yrittajyyskasvatus/pdf/Gibb.pdf>
- Prinsloo, P., Slade, Sh., & Galpin, F. (2011). A Phenomenographic Analysis of Student Reflections in Online Learning Diaries. *Open Learning: The Journal of Open, Distance & e-learning*, 26(1), 27-38.
- Rae, D., & Carswell, M. (2000). Using a life-story approach in researching entrepreneurial learning: the development of a conceptual model and its implications in the design of learning experiences. *Education and Training*, 42(4/5), 220–227.
- Reeve, J. (2001). *Understanding motivation and emotion* (3rd ed.). New York: John Wiley & Sons, Inc.
- Schumpeter, J. A. (1934). *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. US: Transaction Publishers.
- Shacklock, G., Hattam, R., & Smyth, J. (2000). Enterprise education and teachers' work: Exploring the links. *Journal of Education and Work*, 13(1), 41–60.
- Singer, J., & Bloch, H. (1990). *Differentiating the entrepreneur: a functional – personality theory*. Kansas City: University of Missouri, School of Business and Public Administration.
- Smuts, J. (1927). *Holism and evolution*. London: Macmillan and Co., Limited
- Stevenson, H. (2000). Intellectual foundation of entrepreneurship. In *Proceedings of the USASBE/SBIDA 2000: The Entrepreneurial Millennium* (pp. 1–22). San Antonio, Texas.
- Tan, S., S., & Ng, F. C. K. (2006). A problem-based learning approach to entrepreneurship education. *Education and Training*, 48(6), 416–428.
- Wilson, K. (2008). Entrepreneurship Education in Europe. In J. Potter (Ed.) *Entrepreneurship and Higher Education* (pp. 119–138). OECD.
- Wing, T. Y. M. (2006). Exploring the Behavioural Patterns of Entrepreneurial Learning. A Competency Approach. *Education and Training*, 48(5), 309–321.