

## **Paper Title**

LE-GAME, The Learning Entrepreneurship Game, A Solution To Optimize Entrepreneurial Teaching. Does success really drives success?

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## **Abstract:**

**Questions and Objectives:** How do we identify which tools better fit our classrooms or business setups? What are the effects of the changing characteristics of our society on teaching tools? Doesn't entrepreneurial learning require far more "pull-learning" instead of "push-teaching"?

The key goal of Dutch universities of applied sciences is to develop competencies among their students. Competencies are described as "knowledge, skills, attitudes and behaviour to be successful in a professional environment". But, isn't teaching focusing too much on knowledge, a little on skills, somewhat on attitude and little on behaviour? Shouldn't we focus in the learning of entrepreneurship on learning in "being successful"? Is it possible to combine education with entrepreneurship to create an effective, efficient, flexible and creative learning process? Can the aspect of creativity be defined in a specific new way, to have a robust system of concepts? Why do we need the 'edupreneurial method': an educational learning environment that stimulates the context of entrepreneurship? Why is a role-play game such an authentic environment? Do you need successes to learn to be successful? The core objective of the paper is to prove that LE-Game (Learning Entrepreneurship Game) provides a competitive tool in learning entrepreneurship.

**Approach:** Our "edupreneurial" method allows making of mistakes to be a positive element in a learning process since it is rewarding in terms of the entrepreneurial experience. This pull strategy of learning is effective by the experience of positive emotions: success drives success. LE-Game is a complex business role-play game with roles as of suppliers, producers, financiers, and traders. In the simulation, several markets are created where Lego towers/parts are produced and traded.

Because we face an ever-changing world, the characteristics of the learning environment for entrepreneurship should contain the dynamics in which students are exposed to the ever-changing and uncertain market situations which are complex and unpredictable. This paper looks at the challenges that have been obscuring the development of entrepreneurial learning environment for the Higher Level Education students. It also explains as to how identification of these challenges lead to the need of developing an innovative simulation game, called the LE-Game that is being introduced as an entrepreneurial learning tool among several

educational institutes across the Netherlands. This game emphasizes on the importance of effective, efficient, flexible and creative entrepreneurial learning processes, while teaching participants to experience and overcome entrepreneurial challenges.

**Results:** The data collected before and after playing LE-Game can show a clear enhancement of entrepreneurial behaviour. Using the experimental method provides an opportunity to verify the statement that this game is changing participant's behaviour towards more entrepreneurial characteristics. Implication: Stimulating entrepreneurial behaviour among students requires new teaching methods that are applicable to the changing mindsets of the new learning generations. The characteristics of today's society demand different kind of methods of contemporary professional education.

**Value Originality:** Unlike common computer-based simulation tools, LE-Game demands physical and intellectual presence of the participants while providing an authentic entrepreneurial setting that is adaptable to real-time issues and situations of the teams of students, entrepreneurs or professionals.

### **Keywords**

Connectivity Learning, Edupreneurial Method, Pull Learning, Role-Simulation LE-Game

## **Introduction**

The characteristics of today's society demand different kind of methods of contemporary professional education. The new generation is born in an era of digital gadgets, as a result of which, the threshold to communicate the knowledge and information has lowered substantially. The flow of information is enormous and filtering of the right information and responding to the right stimulations has become more relevant than ever. With the technological progress, the communication nowadays has become totally different: it is more complex, visual, and faster and is required to be very coherent. New learning methods are needed to cultivate the talents of our new generations, since the characteristics of today's society have changed the mindset of these new generations. We believe that the future of education should focus on the effectiveness of the learning situation, instead of the use of standard books as a starting method. Prensky (2001), and Veen and Vrakking (2006) presume that the current generation of students follow different study methods than the generation before, simply because they are brought up with the new ICT technology, learning through computer screens, icons, sound, games, exploration and show non-linear learning behaviour.

Since the inaugural 3E conference is specifically focussing on **questions** in the education of entrepreneurship, the objective of this article is to point out questions regarding this theme. So the major question is: what are the consequences for the changing characteristics of our society for the teaching tools? How do we identify which tools better fit our classrooms or business setups? Doesn't entrepreneurial learning require far more "pull-learning" instead of "push-teaching"?

## **Method of the research: the experimental method and desk research**

Desk research has been mainly used to analyze the learning and teaching processes, especially those related to our experiences with authentic learning environments. These authentic learning environments, such as International Learning Companies (ILC's, groups of students carrying out real assignments for "real paying customers"), led us to the thesis of testing entrepreneurship behaviour.

We have used the experimental method before in testing whether participant changed their behavior in the entrepreneurship role simulation game, the LE Game (LE stands for "learning entrepreneurship"). Testing what everyone could clearly see when a LE Game was played: participant being activated to entrepreneurial behaviour. We showed that in our experiments the participants on average changed their behaviour style towards more extrovert behaviour.

Economics being a social science sometimes provides us the opportunity to carry out the experimental method as a research method. Here we use the testing environment of LE-Game, where we use Lego bricks to simulate learning processes. LE-Game offers participants the chance to experience entrepreneurship in a safe and simulated environment. The experimental method can be applied because LE-Game can be played again and again, so our hypothesis can be validated or falsified when the experiments are repeated. This is exactly what we did: until now we found again and again more or less the same results.

## **Literature**

Our starting point about learning is our own professional experiences at the Stenden university of Applied Science in Emmen. Learning at Stenden, as in all Dutch universities of Applied Sciences, is about students acquiring "competencies". Competencies are described as

“knowledge, skills, attitudes and behavior to be successful in a professional environment”. While teaching is mostly focused on knowledge and skills, our focus in the learning has been on “being successful”. But how is “being successful” defined? As discussed in the previously published article<sup>1</sup> on authentic learning environments, we experienced especially in the “international learning companies” (ILC’s ) that “being successful” implies an environment in which there is a “risk” aspect; an environment with the dynamics to experience positive emotions of being successful by overcoming these risks.

Desk research led especially to the analysis of Prof. Wim Veen, who shows the change in teaching needed to cope with the learning attitude of students in the today’s world. In his book, *Homo Zappiens and the Need for New Education Systems*, he states that, “Experiencing these digital information flows, kids develop an exploratory learning approach trying to give meaning to the information provided.” In a fascinating presentation (see Figure 1), he showed us the development of our students, due to the technological development in ICT. It made very clear that the educational world is changing.

Figure 1: **Old teaching vs. New Teaching**



Our target groups in education request new learning methods, so teaching methods should change too. Especially stimulating entrepreneurial behavior and attitude among students require such new teaching methods that are applicable to the changed mindsets of these new learning generations. Methods that use network organizations to create effective education in the mindset of the new generation showing non-linear learning behavior (Veen cs. 2009). The society is changing at a very fast pace and the new features of the today’s society demand different kind of learning methods. They demand effective training focusing on the required competencies and quick results connected to the mindset of the new generation.

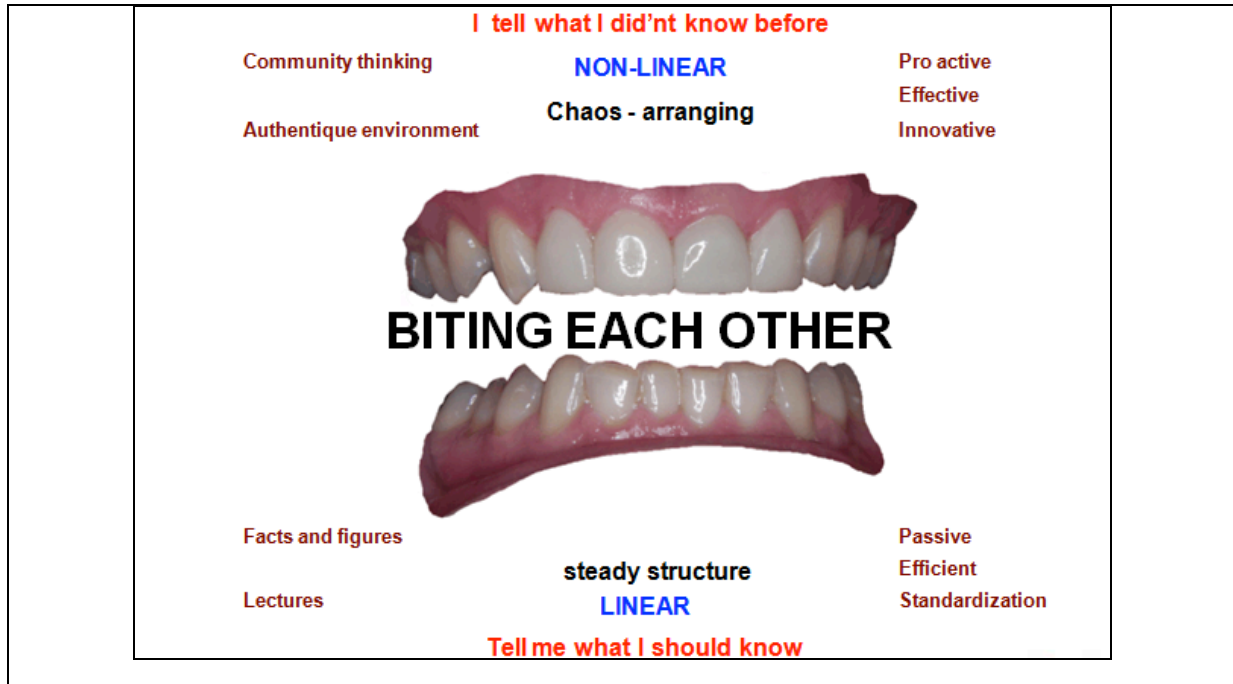
<sup>1</sup>**The Edupreneurial method: an authentic environment as a base for effective education**

Experiences of demand driven stimulation of entrepreneurial futures in authentic environments

Key words: Edupreneurial, Kolb learning styles, authentic “neutral Kolb” environment” Authors, Henk Roelofs and Shilpa Samplonius (Riga, 2011).

The non-linear learning process is conflicting with the linear learning processes. A linear learning process is guided by the structure based on “tell me what I should know” (push learning).

Figure 2: **Opposed Methodologies: they bite!!** by: Adriaan Nieuwenhuis



Because the goal is to develop knowledge and skills at HBO (Higher Education)-level, a competence of self directed learning is required. Non-linear learning leads to another statement: “I will tell you what I have learned” (pull learning). We developed an action point system to measure this responsibility of students for their own learning processes (Roelofs, Nieuwenhuis, Saleem, 2012).

Illeris points out the ‘mislearning’ element in learning processes, because ‘*in education, at workplaces and many other situations, very often people do not learn what they could learn or what they are supposed to learn*’; Mislearning due to misunderstandings, lack of concentration, mental resistance, etc. Since young people are highly engaged in a process of personal identity development, Illeris means that young people fundamentally meet all learning initiatives with questions such as: What does it mean *to me*? Or: What can *I* use this for? - implying that it is only worth paying attention to if it is subjectively accepted as a usable contribution to the present demands of the identity process.

Our educational system should therefore change from classical educational approach towards the use of effective “authentic learning environments”, thereby creating a context where the characteristics of the mindset of the new generation are the standard.

According to Anthony and Jan Herrington (2005) in their book about authentic environments, such an authentic environment should provide:

1. An authentic context that reflects the way the knowledge will be used in real

- life.
2. Authentic activities.
  3. Access to expert performances and the modelling of processes.
  4. Multiple roles and perspectives.
  5. Collaborative construction of knowledge.
  6. Reflection.
  7. Articulation.
  8. Coaching and scaffolding.
  9. Authentic assessment.

In an earlier article about International Learning companies we realized such authentic learning environments, where all elements of Herrington's definition were applied. We analyzed our successes and our mistakes through the evaluation of the process of almost 20 international learning companies and the individual evaluations of the participants. The 5 official versions ILC Handbook show this iterative process. (Van der Sijde and Roelofs, 2005).

### **Competences & learning**

Returning to the first feature - effectiveness; the focus of learning processes has to be on the key goal of all Dutch universities of applied science-s: to develop "competencies" of their students. Competencies are described as "knowledge, skills, attitudes and behavior to be successful in a professional environment"<sup>2</sup>. But: isn't teaching is focusing too much on knowledge, a little on skills, somewhat on attitude and little on behaviour? Shouldn't we focus in the learning of entrepreneurship on learning in "being successful"?

Regarding the structure of learning processes, Jean Piaget is often referred, who distinguishes four different types of learning:

- Cumulative learning - isolated information, something new that is not part of anything else.
- Assimilative learning - new element is linked as an addition, to develop gradually, stepwise.
- Accommodative learning - breaking down existing schemes and transform it so the new situation can be linked to it.
- Transformative learning - personality changes.

Knud Illeris (2009) refers to these four types of learning, school activities and competencies, as he states in his book *'Contemporary theories of learning' that 'ordinary discussions of learning and the design of many educational and school activities are concentrated on and often only aimed at assimilative learning, as this is the sort of learning that the usual understanding of the concept of learning is about. But today this understanding is obviously insufficient, and the much-demanded generic competencies can only be built up by a combination of assimilative, accommodative and, eventually transformative learning*

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<sup>2</sup> Various definitions exist, according to TUNING in the EU's CoRe-project; Competences represent a dynamic combination of cognitive and metacognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values. Fostering these competences is the object of all educational programmes.

*processes*'. Also Illeris points out that *'the program offered must not only have an acceptable, interesting and challenging content, it must also contribute to an acceptable positioning in relation to contemporary trends on the youth lifestyle market, and it must be organized in ways and by teachers who are in harmony with the personal needs of the young learners'*.

Keeping the objective of the 3E Conference in mind, questions regarding entrepreneurial education have been specifically addressed in this article. How do we identify which tools better fit our classrooms or business setups? What does "better" mean and what does it imply? In our view it implies that learning methods should have features such as:

- Effectiveness: the power to achieve the learning objectives. To learn, one has to give meaning to information and communication, which can be achieved in the best way within networks where people communicate, cooperate and negotiate. Connectivity to create cooperative and creative 'learning by doing'.
- Efficiency: the power to optimize inputs in order to realize the learning objectives.
- Flexibility: the power to adapt fast changes so that the effectiveness and efficiency still can be achieved. Each entrepreneurial game simulation (explained later) is different and the dynamics of complex systems are characterized by new elements which arise due to the creativeness of the participant. This requires anticipation to keep the learning method up to date and running, continuous improvement similar to the Kaizen philosophy.
- Creativity: the power to bring in the changes which result in the future learning methods still will be effective, efficient and flexible. Learning methods themselves have to create new learning opportunities. Here I have defined the aspect of creativity in a specific new way, to have a robust system of concepts.

To avoid mislearning, contemporary professional education should develop more effective, efficient, flexible and creative learning methods that fit better in this 'new' mindset of the new generation. So we postulate that the focus has to be on creating an authentic learning environment based on a demand driven, pull strategy, as the development of contemporary skills is far more demand driven than supply driven. So we pose again a question: doesn't entrepreneurial learning require far more "pull"-learning instead of "push"-teaching?

In an earlier article<sup>3</sup> we have pointed out that it is possible to improve one's entrepreneurial behaviour and skills by playing the entrepreneurship simulation game. As a result, something as complex as entrepreneurial behavior is indeed teachable and learnable. The developed "edupreneurial method" integrates the stimulating effects of positive emotions to support learning processes in a pull system of learning: "success drives success".

The learning aspect of entrepreneurship is described in "the Entrepreneurial Process" (Coulter, 2003) which is characterized by:

- A context to identify opportunities
- Possible competitive advantage(s) to start
- Engage in activities that are entrepreneurship in action

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<sup>3</sup> The Edu-preneurial Pedagogic Method: providing risk and added value experience in a pull system for learning entrepreneurship, China-USA Business Review ISSN 1537-1514 October 2011, Vol.10, No.10, 993-1010 (2010)

The Entrepreneurial Process should be present in the learning environment: an entrepreneurial context for identifying opportunities, also when learning entrepreneurship, each student should be in a starting position where he/she has at least a possible competitive advantage(s) to start. The learning environment should also have the dynamics that make it possible to make decisions and engage in activities that are entrepreneurship in action. In our opinion this means an environment in which there is a “risk” aspect.

An “authentic edupreneurial” environment has the characteristics of the entrepreneurial process, with the opportunity of each participant to create value and learning by successes of doing it.

### **Better learning in authentic edupreneurial learning environments**

In an earlier article<sup>4</sup> we emphasized on the importance of an authentic learning environment, because the authenticity of this environment is needed to create effective learning. The difference of such a learning environment with a professional environment is that it is allowed to make mistakes, sometimes even encouraged to make mistakes. As making mistakes are regarded positive in the acquiring of entrepreneurial competencies. The pull strategy in learning in such an authentic learning environment is supporting the effectiveness, since the development of soft skills is far more demand driven than supply driven.

We pointed out in this article that an edupreneurial (synergy of education and entrepreneurship) learning environment should have the dynamics that make it possible to learn from making mistakes and from experiencing successes. An environment in which there is a “risk” aspect, with the opportunity for each participant to create value and learning by successes of doing it, or not. This specific element of “risk” has been integrated as a key element in the development of the Learning Entrepreneurship Game (LE-Game)

To summarize: we applied Wim Veen’s analysis in several new learning concepts, especially for learning entrepreneurship, thereby creating the “edupreneurial method”. The edupreneurial method is a combination of theory of economics and practice of entrepreneurship i.e. a demand driven—pull strategy—learning system. The edupreneurial method allows the making of mistakes to be a positive element in a learning process since making mistakes is rewarding in terms of the entrepreneurial experience.

In our view the main change is the demand driven change in teaching, caused by a demand driven learning. Learning by doing has an 80% retention rate, making ‘learning by doing’ one of the most effective forms of learning (Sousa 2006). Moreover, since making mistakes is rewarding in terms of the entrepreneurial experience, “making mistakes” should have a positive connotation in an edupreneurial environment. An example of this benefit might be: “now I know that this doesn’t work, let’s try another way”.

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<sup>4</sup> **“The Edupreneurial method: an authentic environment as a base for effective education**

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Moreover, learning in the present times has to be both “connected” and “collaborative” to be an effective method of learning. An authentic learning environment should make connected and collaborative learning possible. It should therefore combine education with entrepreneurship to create an effective, efficient, flexible and creative learning process. This we term as an “edupreneurial” method and it is applied in our entrepreneurial simulations LE-Games (LO-Game, LA-Game & LE-Game).

### **Our learning methods: simulation games where ‘success drives success’**

We applied our analysis to develop new learning methods, especially by developing our simulation games. The learning methods of LE-Games simulations (LE-Game, LA-Game and LO-Game) fulfil all these criteria. Moreover we added “the element of success” as a relevant ingredient in the learning processes.

**LO-Game** (Logistics Game) visualizes business growth, from the point of view of the development of one organization operation in a business environment with suppliers and customers. LO stands for Learning Operations Management. The development can be observed with the help of different diversified simulations featuring various learning objectives and criteria.

**LA-Game** (Language Game) applies learning by the edupreneurial method. Participants are learning, for example, the basics of the Chinese<sup>5</sup> language using their own entrepreneurship. While many language learning processes are based on a “push strategy”, the LA-Game is based on the “pull strategy” as this simulation game forces participants to communicate and negotiate in Chinese. “No Chinese, no money!” The successes as an entrepreneur make learning of Chinese a logical consequence; learning by playing and enjoying through the participants’ own intense experiences, similar to any child starting to learn her/his language. The learning process is triggered and guided by the demand for Chinese communication in an entrepreneurial game situation. Using all senses and emotions it leads to gaining a quite decent number of Chinese vocabulary as a result of one’s own experiences. This learning method through senses is what we call the “Reference Creation”.

**LE-Game** (Learning Entrepreneurship Game) focuses on learning entrepreneurship using an offline simulation set up. This game applies the “Edupreneurial” method, which is a combination of theory of economics and practice of entrepreneurship; a demand driven - pull strategy - learning system. This pull strategy of entrepreneurial learning is proven effective by the experience of positive emotions: success drives the success. LE Game—A Business Role Game

### **Simulation & games**

Games are very popular in today’s world, also in educational systems. What differs from the simulations? What are the similarities? Authors like Gredler analysed the differences and similarities between games and simulation. Clearly the main difference between game and simulation is that you can win a game and you cannot win a simulation.

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<sup>5</sup> “Reference Creation as an Effective Learning System for Teaching Languages (Chinese, Hindi) In a Network of Participants Using the Edupreneurial Method and Zapp-Learning. First Steps towards Organizing an Unconscious Learning Methodology.” Henk Roelofs, Adriaan Nieuwenhuis, Rizwan Saleem, (2012). Presented at Second International Conference on Language, Thought and Education: University of Zielona Góra (Poland, 2012)

For Gredler similarities between Games and Simulations are:

- (1) Transport the participants to “another world”;
- (2) Participants control their own actions.

The first aspect of transporting the participants to another world is realized in LE-Game, playing with Lego is reminiscent of many participants’ childhood, the time in their lives when playing was the focus. Also the second aspect is applicable, since each participant is challenged to guide his company in the best way and to make as much profit as possible, thereby each participant controlling their own actions.

Table 1 *Games and Simulations—A Comparison*

Games	Simulations	LE-Game	LA-Game	LO-Game
Objective is to excel by winning	Objective is to execute serious responsibilities	Both	Both	Only Simulation
Linear	Non-linear	Both	Both	Both
Set of rules	No set of rules. Relationships that change over time	Both	Both	Both

In LE-Game, the objective is to learn entrepreneurship, but there is also a winning element: The one who earns the most profit, wins. The dynamics caused by the scarcity of money and time, and the competitors, create both linear and non-linear processes. Also in every LE-Game, we experienced that participants created new elements, sometimes even new rules, and it can be clearly shown that relationships between participant changes over time. Sharing successes create positive emotions that support the learning of entrepreneurial competences.

The experience acquired while participating in LE Game provides the confidence to participants to address the uncertainty caused by the necessity of creating added value while being exposed to competition.

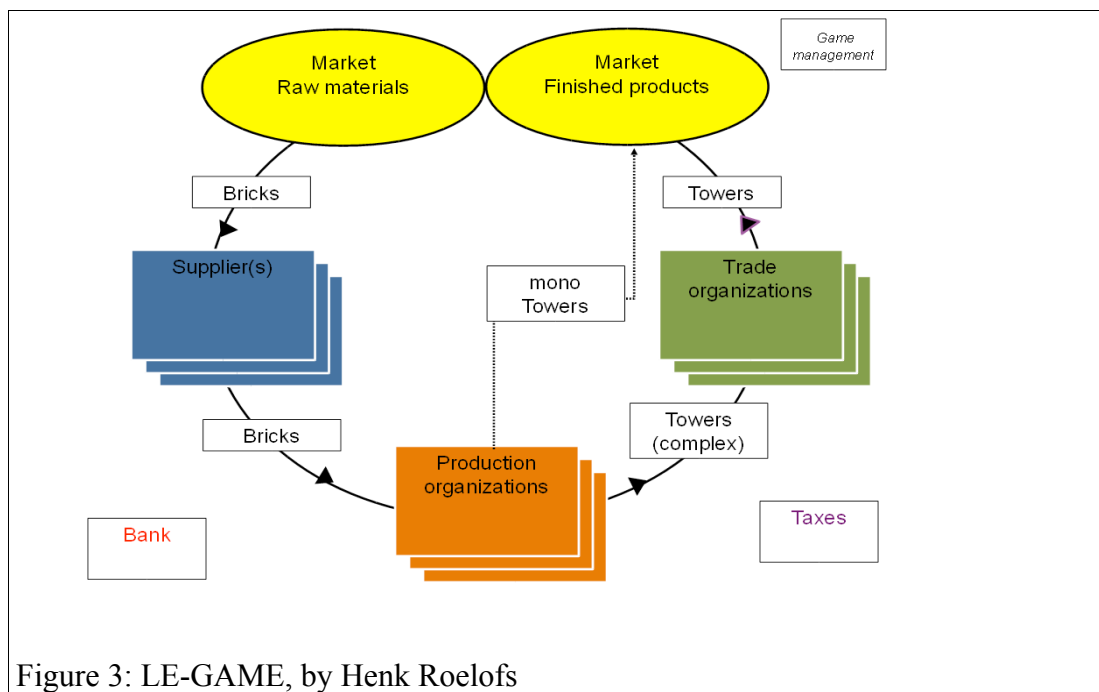


Figure 3: LE-GAME, by Henk Roelofs

## LE-Game explained

LE Game offers participants the chance to experience entrepreneurship in a safe and simulated environment. It is an authentic context for the learning process of entrepreneurship that focuses on two key characteristics: creating added value and pursuing opportunities. The participants develop their skills by using the market opportunities: so a demand oriented learning method to develop entrepreneurial competences in an authentic learning environment. The experience acquired provides the confidence to bridge the uncertainty caused.

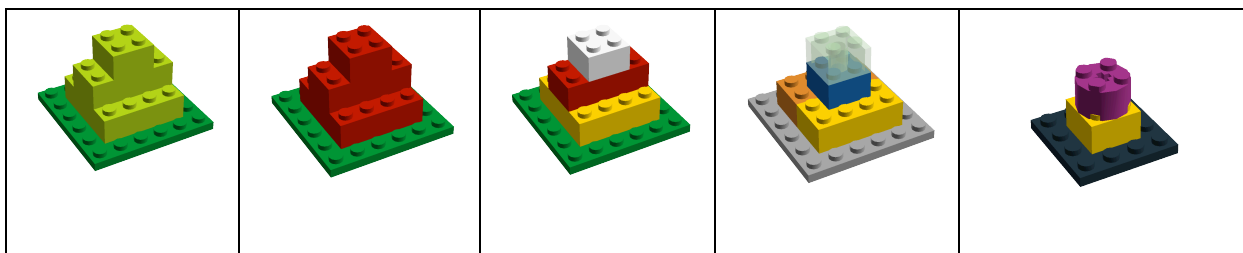
The essence of the simulation game LE Game lies in the conflict of interests among the different market players (see figure 3). In the game simulation LE-Game, participants are exposed to real uncertain market situations. The drive to participate actively is caused by real uncertain market situations in LE-Game itself: complex, unpredictable, and creating a demand to participate. In LE-Game the objective is learning, but there is also a winning element: the one, who scores the most 'profit', wins.

So, the participants experience the market competition in combination with the scarcity of the resources: the pressures of the scarcity of money, time and of course, the competitors, being continuously exposed to the market transactions and the risk during the game. The dynamics caused by this pressure of the scarcity of money and time and of the possible competitors create both linear and non-linear processes. Each participant is challenged to guide his company in the best way to make as much profit as possible. Success drives success

Each participant is triggered by senses and emotions (Damasio). Positive emotions in experiencing successful transactions support the learning by doing process.

In the simulation, several markets are created, where Lego products are traded. Participants buy and sell commodities, produce and /or trade Lego towers or Lego parts. The use of Lego makes LE-Game also quite sustainable, since there is no waste produced. This is an extra advantage of the LE-Game.

Figure 2: Selection of the final products traded in LE-Games



The rules of the framework of edupreneurial method LE-Game are:

- Everybody is entrepreneur in his/her role. In the simulation, several markets are created, where Lego products are traded. Participants buy and sell commodities, produce and /or trade Lego towers or Lego parts;
- There are three variations in the roles: Trading organisations, Production organisations and Suppliers (see figure 3). The added value is created by the entrepreneurs by trading

the raw materials, which can be bought at the Market Raw Materials and the finished products which can be sold at the Market Finished products;

- The market consists of two types of products: simple mono-coloured towers and multi-coloured towers
- Besides the entrepreneur roles there can be “supporting roles” like a bank, and tax authority, this depending on the complexity of the simulation (LE-Game basic, LE-Game silver, LE-Game gold, see <http://le-network.nl/en/games/le-game/> )
- All entrepreneurs are limited in their resources, have a (small) comparative advantage in their stock and have the same starting capital: € 2500 in cash and in kind.

Learning in a school mostly is restricted to knowledge and skills; no explicit attention is given to learn behaviour and attitude. This is something that explicitly can be learned in LE Game. One can practice an open attitude in LE Game: acceptance, kindness, curiosity, openness.

- LE Game teaches a participant to cope with opportunities, acquire positive emotions by activating these opportunities in an entrepreneurial way. It changes an attitude “I cannot, because I don’t have the means...” which evolves negative, sad emotions towards “How can I afford, realize that...” such an entrepreneurial attitude inspires to enthusiasm, to use opportunities, to ‘dream’, to create.
- LE Game teaches to think and to discover new financial possibilities. Instead of “just sit and wait”, participants create these opportunities, since “money” is just a resource and many deals are made not by merely exchanging money but by making agreements.
- LE Game teaches to decide fast. Knowing when to take a decision is an important competence. Opportunities come and go. Sometimes when you don’t take a decision the opportunity disappears, is gone. In LE Game you can experience these kinds of situations.
- LE Game teaches to enlarge your view, so participants can discover opportunities. Many people have kept their eyes shut and never open them to discover opportunities. To learn to identify opportunities that ‘others don’t see’, is an important skill. Once you have identified such a unique opportunity and used it, you will see opportunities all your life.

LE-game gives the participants insight into the operational, financial, and commercial sides of entrepreneurship. Also, it showed the effectiveness of a pull strategy, initiated by customer(s). The experience acquired while participating in LE Game provides the confidence to participants to address the uncertainty caused by the necessity of creating added value while being exposed to competition. So making mistakes, and, especially, experiencing successes is part of the learning process.

Since competences are combinations of skills, attitude and knowledge to be successful in a professional environment, a demand driven learning process should focus on being successful. Using a simulation role game like LE Game creates a pull system, in which learning is based on activating the needed competencies to be successful as an entrepreneur.

The experience of an entrepreneurial context in which opportunities arise or disappear, create a dynamic environment for acquiring entrepreneurial competences. A study process in which making mistakes is positively awarded; even having fun about them is a core element of the

LE-Game experience! It helps in changing the mindset towards entrepreneurship: learning by experiencing risk, experiencing aspects of sometimes flexible interpretation of moral aspects (even dishonesty) which is uncommon in education.

We experienced in every LE-Game session that participants create new elements in the process of market interaction; sometimes even new rules (shows ‘creativity’ of this learning/teaching method). Using a simulation role game such as the LE-Game creates a pull system, in which learning is based on activating the needed competencies to be successful as an entrepreneur.

### **Background of behavior Style and Simulations**

The conclusion that behavioral styles are very decisive in business has gradually developed. It began with experiences on the importance of hard skills versus soft skills in learning. During the learning companies, we found out that behavior had a much bigger impact than expected. By testing the behavioral style, we introduced the “soft elements” of the group process in order to identify bottlenecks in the effectiveness of the groups. The group of students had to achieve, create services with added value for a customer.

The importance of behaviour styles was continuously confirmed in the several learning companies.

The behavior style analyses in the learning companies were based on the Management Development Instrument (MDI) test. This style analysis is based on William Moulton Marston’s *Emotions of Normal People* (1928). MDI is an authoritative test which is rather popular within companies, because it measures behaviour criteria in an objective manner. Based on this test we have developed a simple and efficient behaviour style scan.

The major characteristic of the 4 behaviour types:

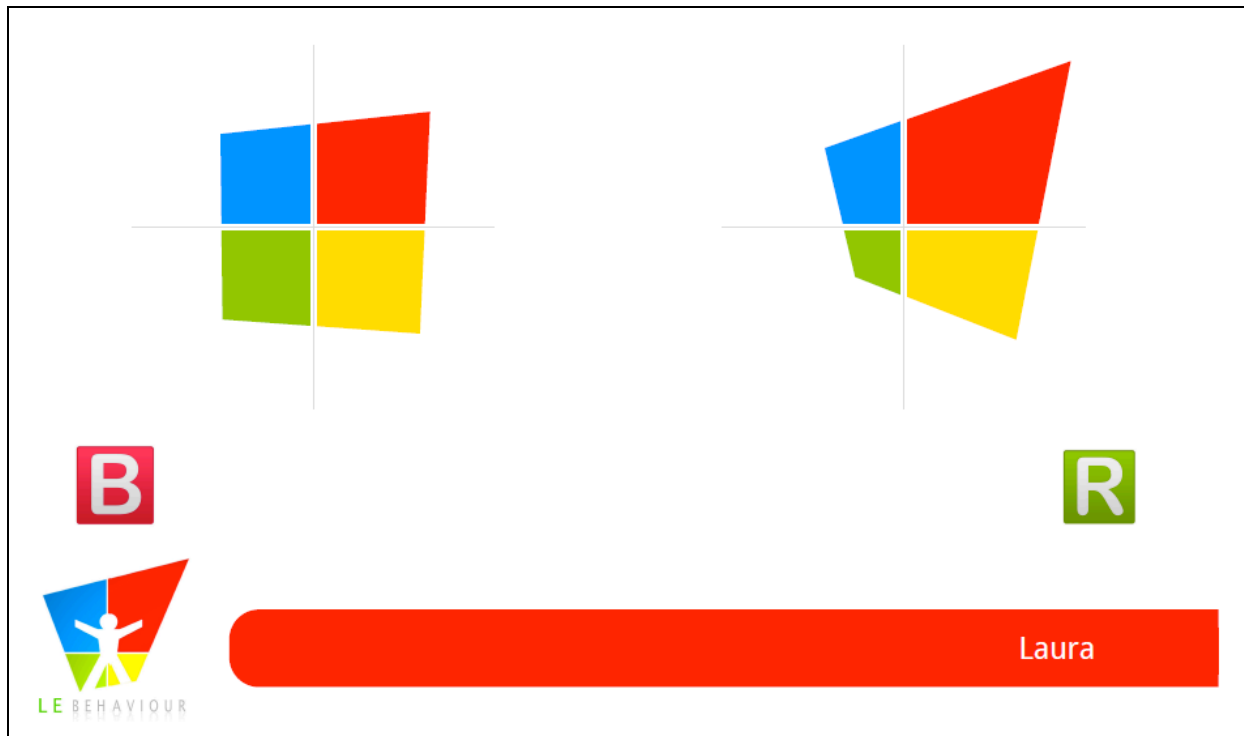
(1) The behaviour type dominance—represented by the colour red—is found among extroverts and thinkers. This type is also called the “intuitive thinker”. Basic characteristics are dynamism and anger. Someone with a dominant style of behavior is a clear-cut leader: a powerful, demanding, dominant and fairly headstrong personality;

(2) The behaviour type influence—represented by the colour yellow is found among extroverts and feelers. Basic characteristics are optimism (boundless) and enthusiasm. Someone who scores high on this style is an inspirer: extrovert, kind, friendly and convincing. He is optimistic, enthusiastic and creative. He is a real talker who believes in his product;

(3) The behaviour type stability—colour green—is found among introverts and feelers. Basic characteristics are striving for harmony, unwillingness to show emotions. Someone who scores high in this style is a supporter, a kind, friendly, quiet and gentle person who gets along well with others. He is very sympathetic and encouraging. He is moderate, self-controlled, attentive, patient, trustworthy and methodical;

(4) The behaviour type conformity—colour blue—is found among introverts and thinkers. Basic characteristic is perfectionism. Someone scoring high in this behavior is an observer, precise, careful, disciplined and painfully conscientious. The latter means he will always want to complete his tasks down to the smallest detail, not being exact troubles his conscience. Only perfection is good enough. He has very critical observational powers and will always demand well-founded arguments.

**Figure 3: A behaviour style example of a LE-Game winner**  
Basic style and Response style



To find out whether the behavior styles correlate with the entrepreneurial skills, we have used the experimental method. The data collected at various points is analyzed. The participants are tested before the LE-Game participation and after the participation in LE-Game. This gives us pre-game and post-game results, which we compare. Appendix 1 gives an insight into the behavioral changes after the game. On an average, there is significant change towards extravert behavior style: dominance (“red”) and influence (“yellow”). So our expectations, which were clearly visible to the observers during the games we played, have been supported by these statistics. As an entrepreneur, you have to activate extrovert behavior: remaining inactive and waiting does not lead to the most successful game result for the participant.

### **Success drives success: positive emotions in LE-Games that stimulate learning**

Through LE-Games we found out that the element of obtaining successes is crucial to support the effectiveness of learning processes. A big advantage of LE-Game or the entrepreneurial method is that it is smart, easy and fun method of learning. LE-Game increases the quality of one’s personal communication abilities, as the participant is directly confronted with the consequences and rewards of his own behavior and actions within the realistic dynamics of the simulation game. Explicitly the “fun” aspect of the roles in the simulation game is highlighted because humour is a positive stimulus for learning.

Since the inaugural 3E conference is specifically focussing on questions in the education of entrepreneurship, we posed the question: “Does success really drive success?”. Since we can use the experimental method, we tested this in a simple way: we asked participants during the break in LE-Game (we played 45 minutes and again some 45 minutes) simple to write down their successes. After the break we asked them again. Students did not have the slightest idea why this question was asked. The results are:

### Number of Successes

Student	Before the break	After the break	+ or -
1	1	3	2
2	2	3	1
3	1	1	0
4	2	3	1
5	2	5	3
6	2	2	0
7	2	1	-1
8	3	4	1
9	4	9	5
10	3	4	1
11	1	3	2
12	3	3	0
13	0	0	0
14	3	2	-1
15	3	6	3
16	1	1	0
	33	50	+ 17 (>50%)
	± 45 minutes	± 45 minutes	

Also this simulation was used to verify/falsify changes the changes in behavior style which we have published earlier. Again the results were confirmed: see appendix 1.

#### **Learning analyzed: Emotions and learning**

In LE Game and in the edu-preneurial method we combine emotions and learning processes. But why should this be effective? Damasio elaborates the subject, he states in the preface of his book *Descartes' Error*, his main subject being the relation between emotion and reason, that emotion can assist the reasoning process rather than disturb it (*Descartes' Error*, Introduction, xvii). Furthermore he states that throughout the evolution emotions allow acting smartly without to think smartly. Pre-organized mechanisms (instinct, emotions) help the organism classify things or events as 'good' or 'bad' because of their possible impact on survival. Damasio writes (*Descartes' Error*, Introduction, xxiii): "Emotion and feeling...assist us with the daunting task of predicting an uncertain future and planning our actions accordingly." Feelings along with the emotions they come from serve as internal guides, he states, and feelings help us communicate to others signals that can also guide them.

As we searched for an explanation of the "success drives the success" within LE Game simulations, a change in entrepreneurial behaviour was detected after playing this game in 2 hours. It was the major reason to develop a game to teach something in a new and very effective way. Intuitively we knew this ought to be effective, but why?

Damasio provides a clue in his analysis on emotions: “Emotions play a role in communicating meanings to others and they may play the cognitive guidance role” (Descartes’ Error, p.130). During the simulation game participants are frequently confronted with deliberate emotional stimuli which create a pull system for learning to communicate. Damasio adds that being conscious of emotions, offers you flexibility of response based on the particular history of your interactions with the environment (Descartes’ Error, p.133). This is exactly what happened during the role game simulations of LE Game.

### **Learning analyzed: Neutral Kolb environment**

What are the key elements of learning? In literature (Smith, M. K., 1999) we see several approaches to learning: the behaviourist orientation sees learning resulting in behavioural change in a desired direction, cognitive learning focuses on developing capacity and skills, humanist learning should result in becoming self-actualized, autonomous human beings.

Kolb (Kolb, 1988) in his experiential learning theory sees learning as a cyclic process, expressed as four-stage cycle of experiencing, reflecting, thinking, and acting. Kolb states that different people **prefer a certain single different learning style**, based on 2 dialectic fundamental choices: feeling versus thinking, and doing versus watching. According to Kolb, in learning you cannot do both at the same time. So learning processes are structured by internal decisions whether we wish to do or watch, and at the same time whether to think or feel. Kolb’s four learning styles are a result of this ‘dialectic’ choice:

- Diverging: feeling and watching
- Assimilating: thinking and watching
- Converging: thinking and doing
- Accommodating: feeling and doing

According to Kolb the effectiveness of learning is increased if learning is orientated according to preferred learning style. In LE-Game each student can start his learning process from his own preferred learning style: a “neutral Kolb”- environment<sup>6</sup>, because the learning environment is neutral to the preferred learning style. Whether any student prefers to start with first experiencing or first reflecting, or first thinking or just starts with acting: it does not matter.

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<sup>6</sup> **“The Edupreneurial method: an authentic environment as a base for effective education**

Experiences of demand driven stimulation of entrepreneurial futures in authentic environments

Key words: Edupreneurial, Kolb learning styles, authentic “neutral Kolb” environment” Authors: Henk Roelof & Shilpa Samplonius (Riga, 2011).



## **Conclusion**

Contemporary education need teaching methods where students have to acquire competences in a setting that has all the characteristics of new teaching: twitch speed, multi tasking, non linear approaches, connected, collaborative, active, and learning by playing, instant payoff, fantasy, and technology as friend. These characteristics need to be developed explicitly in the teaching methodology, because nowadays this is the standard context for any job.

New, better, learning methods are needed to cultivate the talents of our new generations, since the characteristics of today's society have changed the mindset of these new generations. Contemporary professional education should therefore develop more effective, efficient, flexible and creative learning methods for a better fit in this mindset of the new generation. In short, a demand driven change in teaching, caused by a demand driven learning of the new generation!

Moreover, learning in the present times has to be both “connected” and “collaborative” to be an effective method of learning. An authentic learning environment should be able to make connected and collaborative learning possible. It should therefore combine education with entrepreneurship to create an effective, efficient, flexible and creative learning process. This we term as an “edupreneurial” method and it is applied in the LE-Game. LE-Game is a neutral-Kolb environment, where emotions support learning processes and where successes drive successes.

Our education system should consider leaning its teaching approach towards using more “authentic learning environments” thereby creating a context where the characteristics of the mindset of the new generation are the standard. We believe that the future of education should focus on the effectiveness of the learning situation, instead of the extensive use of standard books as a starting method. Using games could, therefore, be a more suitable method to learn for this generation.

We postulate that the focus in education has to be on creating an authentic learning environment based on a demand driven, pull strategy, as the development of entrepreneurial skills is far more demand driven than supply driven.

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## Appendix 1


<b>LE Game Result of Stenden student on 28 th Februari 2013</b>				
	D	I	S	C
<b>Student name</b>				
student 1	2,2	-0,8	-1,8	0,4
student 2	-0,2	0,7	-0,3	-0,2
student 3	0,4	0,8	-0,3	-0,9
student 4	0,6	1	-2	0,4
student 5	-0,5	1	2	-2,5
student 6	3,7	-0,5	-1,2	-2
student 7	-0,1	-0,7	0,8	0
student 8	1	0	-1,3	0,3
student 9	0	0,1	0,1	-0,2
student 10	3,7	-0,5	-1,9	-1,3
student 11	0,8	1,9	-0,6	-2,1
student 12	1,4	0,8	-0,2	-2
student 13	-4,6	1,2	2,7	0,7
student 14	0,2	1,4	-1,4	-0,2
student 15	-0,2	-0,9	0	1,1
student 16	0	0	0	0
student 17	0	0	0	0
student 18	0	0	0	0
student 19	0	0	0	0
student 20	0	0	0	0
student 21	0	0	0	0
student 22	0	0	0	0
student 23	0	0	0	0
student 24	0	0	0	0
student 25	0	0	0	0
student 26	0	0	0	0
	8,4	5,5	-5,4	-8,5
	<b>D</b>	<b>I</b>	<b>S</b>	<b>C</b>
		<b>13,9</b>	<b>-13,9</b>	

### LE Game Result of Stenden student on 29 th November 2012

	D	I	S	C
Student name				
student 1	0	-0,3	0,6	-0,3
student 2	0	0,1	0	-0,1
student 3	-0,1	0,9	-0,3	-0,5
student 4	0,8	0	-0,1	-0,7
student 5	1,2	1	-1	-1,2
student 6	1,1	-0,3	-0,4	-0,4
student 7	-0,4	0,6	0,5	-0,7
student 8	-1,1	0,2	0,3	0,6
student 9	0,7	0,2	0,2	-1,1
student 10	0,5	0,8	-1,9	0,6
student 11	0	0	0	0
student 12	-1,5	-0,9	2,3	0,1
student 13	-0,5	-0,7	0,2	1
student 14	-0,7	1	-0,2	-0,1
student 15	0,6	1	-0,2	-1,4
student 16	0,4	0,2	0	-0,6
student 17	0,7	-0,7	0,6	-0,6
student 18	-0,3	0,2	-0,1	0,2
student 19	0,7	0,6	0,2	-1,5
student 20	1	-0,7	-0,4	0,1
student 21	2,7	-0,2	-0,7	-1,8
student 22	-2	0,9	1,1	0
student 23	1,5	0,1	-1	-0,6
student 24	1,6	-1,7	0,1	0
student 25	1,4	-0,9	-0,8	0,3
student 26	0,7	-0,7	0,5	-0,5
	9	0,7	-0,5	-9,2
	D	I	S	C
	<b>9,7</b>		<b>-9,7</b>	

2	LE Game Result of Stenden student on 16th March 2012				
3	D	I	S	C	
4	Student name				
5	A	0,3	0	0,8	-1,1
6	B	-1,8	-1	1,9	0,9
7	C	0,3	-0,2	-1,2	1,1
8	D	-0,3	0,7	-0,6	0,2
9	E	0	1,9	-0,1	-1,8
10	F	0,4	-0,2	0,2	-0,4
11	G	0,3	0	-0,3	0
12	H	-0,1	0,3	1	-1,2
13	I	0	-0,1	0,3	-0,2
14	J	0	-0,1	0,2	-0,1
15	K	0	0,5	0,2	-0,7
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21		0	0	0	0
22		0	0	0	0
23		0	0	0	0
24		0	0	0	0
25		-0,9	1,8	2,4	-3,3
26					
27		D	I	S	C
28		0,9		-0,9	

**LE Game Result of Stenden student on 17th February 2011**

Student numb	Department		D	I	S	C
1			0,8	0	0,3	-1,1
2			0,3	0,5	-0,3	-0,5
3			1,1	-1,1	-0,3	0,3
4			-0,3	0,2	0,7	-0,6
5			0	1	-0,7	-0,3
6			0,7	0,7	0,4	-1,8
7			-0,7	-0,3	-0,8	1,8
8			-0,5	-0,2	1,2	-0,5
9			0,3	0,6	-1,4	0,5
10			-0,1	0	-0,1	0,2
11			-0,5	1,3	-0,8	0
12			-0,6	0,7	0,7	-0,8
13			0,7	0	-0,3	-0,4
14			0,8	-0,5	0,3	-0,6
15			0,7	0,3	0,4	-1,4
			-1	-0,1	0,2	0,9
			0	0	0	0
			0	0	0	0
			0	0	0	0
			0	0	0	0
			<b>1,7</b>	<b>3,1</b>	<b>-0,5</b>	<b>-4,3</b>
			D	I	S	C