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# GAME-BASED ENTREPRENEURSHIP EDUCATION

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## Introduction

The developments in regard to the social (!) interactivity<sup>1</sup> of applications in the so-called Web 2.0 and now also with 'E-learning 2.0' open opportunities to the development of learning contexts in which these forms of interactivity have already been implemented independently of the technical developments. In this respect a combination of game-based education and the simulative and ludic strand of new technologies gains theoretical interest. There is an increasing structural similarity between the didactical structure of games as a field of interaction steered by the learners themselves and the technological developments, which likewise promote self-motivated interactions in more or less regulated virtual worlds. As a result interesting developments and potentials for future forms of e-learning arise.

In the remainder of this paper we will analyze the conditions and possibilities of the use of educational games for entrepreneurship education<sup>2</sup> because a further structural similarity shows up here. In analogy to play the perception of real-world obstacles (of technical or social nature) as options for new actions constitutes a main feature of what is considered the typical entrepreneur attitude.<sup>3</sup> The comparability of the concept of 'creative destruction' (Schumpeter) with the determination of the play by the psychological process of assimilation (Piaget 1962)<sup>4</sup> reflects this observation on an analytic level. Against this backdrop the multiple use of games in Entrepreneurship education is not astonishing.<sup>5</sup>

In the following we will see that the mentioned structural similarities root very deeply and that still further facets will expand.

## Educational technology and (ludic) interactivity

Game-based learning on computers experiences a boom in recent times. By the technical development and standardization of 'game machines' and the subsequent conditions for industrial production of games of all kinds, the production costs for respective user software decreased substantially (the saturation of the job market with screen designers contributed its part as well). So meanwhile publishing houses for educational media can produce an indeterminable variety of learning games for domestic computers (in particular of pre-schoolers and pupils from primary school) with low costs for programming. Since these plays are meant for single learners mainly - whereby the play character is to meet the specific motivation problems of the single learner – this is, however, less interesting for us, as we focus our attention on social interactivity.

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<sup>1</sup> What is called interactivity frequently refers to a more or less complex 'interaction design' of the software and possible interaction sequences simulated for the user.

<sup>2</sup> The analysis presented here originated from the Grundtvig learning partnership 'Educating for Entrepreneurship in Europe'.

<sup>3</sup> Grichnik (2006) takes it as the common denominator of economic, psychological and sociological entrepreneurship research that it is dealing with certain decisions in relation to a certain opportunity.

<sup>4</sup> The play like character of assimilation is found in process that an object gets 'assimilated' to an existing cognitive scheme, to which this object has not been subjected before, and it herewith becomes the 'toy' of this scheme: a stick playfully used as a rifle or as a horse.

<sup>5</sup> It has to be mentioned also that there is a fundamental difference between real-world (market) competition and ludic competition. The market is not a spatiotemporally limited playing field. And there is no self-inhibiting of advanced market participants to protect learning processes of weaker participants like it can usually be found in play contexts.

Nevertheless the interactive ludic dimension in virtual environments with its respective simulatory aspects has a 'long' tradition. Starting from simple text worlds (cf. Remmele/Röhr 2003) and various 'cyberspace' experiments a plethora of implementations has developed meanwhile. With the available bandwidth online entertainment business is sprawling with games from Poker to Counterstrike. In comparison the usage of respective on-line learning games is trifling.<sup>6</sup> However, its potential for further development seems high if suitable implementations and the institutional framing to control success of the learning process are developed – for instance in the domain of further education.

E-Learning could benefit very much from such developments. The motivation problem of computer-based learning, which is partly due to its anonymity and is a major obstacle to further success of e-Learning, is confronted in a double way by online learning games: on the one hand by its ludic aspects and on the other hand by the establishment of social relations based on interaction. The ludic dimension generates motivation and satisfaction independent of a specific interest in learning. And the conscious integration of another human, i.e. another learner and not 'only' a teacher, establishes specific social obligations to participate in accordance with the rules of the game.

Thus a large variety of plays, games, and contests is being used for long times for instructional purposes even before the advent of the computer. Even if learning and teaching cultures frequently tend to be rather austere, the use of play-like didactical methods is a regular feature of formal education.

## **Entrepreneur and Entrepreneurship Education**

The term 'entrepreneurship' does not simply designate the field of activity of an entrepreneur, but aims at particular personal characteristics. A German journal for students of economics offers a short online manual, by which one can check one's aptitude for being an entrepreneur ([www.wisu.de/entrepreneur/check.htm](http://www.wisu.de/entrepreneur/check.htm)). On the basis of 16 characteristics the reader is able to examine if his personal profile resembles the given traits. Prior attention is paid to characteristics which refer to the will and ability to organize as well as the readiness to take risks and responsibility. Further on it is crucial also from our point of view that the concept of entrepreneurship relates to the ability for innovative action.

In regard to entrepreneurship education it is interesting to know what kind of person it is targeting at and which competences it wants to teach or educate. Only on this basis suitable didactical methods can be chosen. In current business training courses entrepreneurship education is considered part of this wider discipline. The main attention is given there to the establishment of a new business and the legal questions implied. However, just like entrepreneur and businessman are not to be held equal, a more complex concept of entrepreneurship education is developing meanwhile. In addition to the legal independence of a business the focus is increasingly on vocational independence as an attitude.

Since the bulk of innovation is not initiated from an individual at the top of an enterprise but rather from inside the entire enterprise (on all levels and in all functional areas) companies must try to foster the innovative and entrepreneurial attitude of their employees. This is usually called intrapreneurship and it refers to the will and the ability to organize of employed persons.

Nowadays there is a third group which in general needs to show an entrepreneurial attitude: free-lancing workers who can only bring their own working power to very specified and volatile markets.

For such a heterogeneous target group there is not just one single curriculum. Yet there is a set of competences which is relevant for all groups and at which entrepreneurship education is aiming at in a wider sense. Beyond the rather explicit knowledge related to starting up a business entrepreneurship education has to promote an entrepreneurial mind-set and a culture of autonomy (Weber 2002). It is thus possible to describe the entrepreneurial will to organize in a way which is rather similar to the professional competence ('Handlungskompetenz' cf. Aff 2006) which vocational education is aiming at and which consists of the following partial competences: specific professional competence, meth-

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<sup>6</sup> Recently different universities opened their branches in Second Life.

odological expertise, 'self-competence', and social competencies. If priority is not mainly given to the specific professional competence but to the creative interplay of these factors, it can be compared to certain approaches of entrepreneurship education which are conscious of this curricular problem. Using simulations and games would be or could be such an approach.

### **Learning dimensions of ludic learning**

"If playing is done with interest and enthusiasm it is serious learning." (Loebler 2006) The crucial characteristic of play-based learning is the intrinsic motivation to complete a play-like course of action with its specific suspense and similar repetition (the 'activation circle' cf. Heckmann 1973). It is obvious that this course of action can generate a 'flow' and that by its repetitiveness a learning loop and training effects in regard to specific learning targets can be attained. "Games thrive as teaching tools when they create a continuous cycle of cognitive disequilibrium and resolution ... while also allowing the players to be successful." (Van Eck 2006)

In this context, however, the question emerges which didactically functional feedbacks (e.g. performance control or reflection phase) can be integrated into the game, without destroying the ludic freedom of action the whole methodology is based on. A possibility, widely used in entertainment oriented computer games, is periodic increases of the speed and/or complexity ('a new level'). Climbing up the levels could thus provide means for respective feedback.

In order to be able to determine what is happening 'between the levels', which learning curves are possible, and which forms of instruction by a teacher/referee might be integrated, it has to be clearly differentiated which didactical function games, plays, and simulations can take over, i.e. what can be learned with such a methodological approach at all, and how the results of the respective learning process can be assessed.

In general such an approach is targeting at an internally motivated use or practise of knowledge, especially the activation of tacit and inert knowledge, and at the taking of decisions under the condition of uncertainty.<sup>7</sup> In view of the key dimension of self-governance games and plays are suitable in particular for decision-oriented learning and the acquisition of the above mentioned general professional competence. (In addition, they also promote the development of social competencies related to self-governance in teams.) In reverse Trondsen (2001) remarks that game-based e-learning is mainly suitable for the action-oriented personal type, which prefers visually-mediated and interaction-oriented learning.

Because it is usually difficult to exclude the variability of all relevant factors in different educational settings the problem of determining the success of didactical concepts is rather common. This problem is deepened here by the fact that the criterion for success is hardly accessible through unambiguous tests (e.g. like the ability to solve certain equations).<sup>8</sup> The learning target – an attitude or a mindset – is to be approached through introspection or certain secondary features, which at least partly tend to be of a rather qualitative nature as well (e.g. general performance, contentment team output).<sup>9</sup>

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<sup>7</sup> Blending ludic forms with the mere acquisition of knowledge (e.g. learning at stations) seems rather a questionable hybrid before this background.

<sup>8</sup> This might be a reason for the ambivalent position – from scientific point of view – of coaches, motivation trainers etc. and for their (necessarily metaphorically) concepts ("the internal game").

<sup>9</sup> The general problem of comparability in teaching research has also to be taken into account regarding meta-analyses of the didactical efficiency of plays and games. „Thirty-three out of 46 social science games/simulations show no difference between games/simulations and classroom instruction. The authors conclude that subject matter areas where very specific content can be targeted are more likely to show beneficial effects for gaming.” (Randel et al. 1992)

## **Educational gaming and real-world referentiality**

Therefore it is clear that plays are most suitably applied, where characteristics are to be trained which are also of systematic importance for playing games. Because of that didactical success depends on the fact that there is a sufficient correspondence between a play dimension and the learning target.

In the arts the parallel between playing and learning is obvious, as there is a close relationship between artistic expression and playful performance (cf. Schiller 1795).<sup>10</sup> Also in physical education large parts consist of (rule-based) competition. Language courses often use role plays as a didactical method.

From our point of view special attention is given to games which stress the competitive dimension of games and imitate the real-world competition of economic life. Regarding the differentiation of dimensions of plays and games Caillois (1961) distinguishes between four dimensions:

- ‘mimicry’, plays of imitation and taking roles,
- ‘agon’, games of competition, which are constituted and secured by rules,
- ‘alea’, games of chance,
- ‘ilinx’, games and plays of vertigo, i.e. the mellow experience of oneself, mainly one’s body.

Didactically the latter two dimensions are of smaller interest. The gambler is simply too inactive to gain relevant learning experiences. Likewise ilinx dimension are too self-centered and in the long run too monothematic.<sup>11</sup> These dimensions thus offer very few opportunities for organized learning processes, educational theory is concerned with.

Concerning the supposed habitus of an entrepreneur another fundamental dimension of play needs to be mentioned: i.e. the playful joy of constructing and functioning of oneself as well as of something else (cf. Piaget 1962, Sutton Smith 1978). The will to organize is – among other things - directed at such an experience.

Actual plays and games are usually combinations of these different dimensions. On the one hand entrepreneurship education should thus be concerned with the transition between imitative enacting and exercising a certain professional situation. On the other hand it has to recognize the importance of the fact that business games imitate the real-world (market) competition and hence build on the learning-enhancement of the agon dimension.<sup>12</sup>

Business games are widely known and in broad use, partly also as online applications. They are developed in view of certain didactical models and try to practise professional action schemes in a self-governed way. They are usually played in groups using the motivational effect of the developing social relations (Seeber 2007). The existing business games teach mainly management skills in a narrower sense. The challenge for entrepreneurship education using business games is therefore to widen the scope of the curriculum and to put more stress on the creative element of entrepreneurship.

## **Learning targets and methods of entrepreneurship education**

There is a wide range of medial realizations of such business games. They are implemented as board games, as computer-assisted and completely computer-based games for classroom instruction and as on-line applications for locally separated players. There are specific business games and mock com-

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<sup>10</sup> With the example of playing a musical instrument the difference between the performance and the possession of knowledge is evident.

<sup>11</sup> In addition to these structural play dimensions which frame the immersion of the playing self there is also the thematic dimension of playing, by which the playing is located in the psychosocial context of the subject.

<sup>12</sup> In the end the ‘real’ reality is also a construction of the subjects - an ‘inclusio’. Otherwise the immersion into a rule-based play world – it may be a chessboard, a football field, a couple of building blocks, or the various possibilities computers offer – would not be possible.

panies, role plays (like conferences and auctions), stock exchange games, or simulations of the macro-economic system etc. Regarding the agon dimension we come back to the question which specific competences can or shall be learned hereby. What are the specific traits of the agon dimension and which learning targets are pursued by business and in particular the entrepreneurship education using such a methodological approach.

Interestingly enough Loebler (2006) sees a close relationship between entrepreneurial skills and the playful (learning) conduct of children: „they are motivated to learn, they are interested in a variety of different topics, they ask excellent questions, they try many things to get insights, they are creative, they are impatient.“ A study even point to the fact that entrepreneurial traits found among pre-schoolers are growing weaker in the course of formal education (Kourilsky 1980).

Accounts of entrepreneurial characteristics as learning targets generally show – besides rather indistinct items like creativity and intuition – a fundamental differentiation. On the one hand they are concerned with the field of motivation: self-efficacy, clear values, readiness to take risks, ambiguity tolerance, a will to produce results etc. On the other hand certain skills are mentioned – regarding, e.g., managing, presentation, negotiating and interpersonal competencies (for a summary cf. Collins/Smith/Hannon 2005).

The structural parallels between playful conduct (of children) and the entrepreneurial attitude basically refer to two interlinked features, which reflect the mentioned difference at least partly: on one hand there is a specific form of motivation and on the other hand a specific form of cognitive relation to one's environment. Ludic and entrepreneurial motivation has to do very much with the experience of freedom. It is for example the self-governance which constitutes a basic condition for being in the 'play mode' and in addition it is the entrepreneurial independence providing a similar intrinsic motivation. Also the cognitive attitude in relation to a (variable) environment shows similarities. Many plays and games are determined by the way they are open for external effects; they often systematically include chance into the process (e.g. using a ball or cards). Hence, a game or competition, whose result is certain from the outset, is consequently not ludic in its nature. Respectively a high tolerance in relation to uncertainties in the environment or even the aptitude to see specific options in it is attributed to the entrepreneur.

This analysis has consequences for the understanding and for the practice of a game-based entrepreneurship education:

- Altogether we notice a double shift of the learning target: firstly from the teacher to the student, who is the one to introduce his personal aims into the play; secondly from a learning target oriented at predefined pearls of wisdom to one aiming at active performance.
- The rule of the game should permit uncertainties in the process of the game: e.g. the interactive dimension of a competition (agon) can be stressed, as the conduct of fellow players can not be completely predicted. This could be maintained by conflict situations between learners in direct competition as well as by the need to organize interaction or to come to a decision within a team.
- A test situation should not be structured as a conflict between the student and the teacher, since thereby the pedagogic hierarchy interferes with the play roles. Tests should rather be based on issues related to other learners or external factors.

## **Conclusion**

The use of computer-based (educational) games applied in entrepreneurship education can build on a double similarity regarding the involvement and motivation of the learner. Self-motivated autonomy in relation to undetermined contexts is crucial for the position of the members of (socially) interactive virtual communities, i.e. also in learning communities, of players, and of entrepreneurs. In accordance to this parallel position and its consequences e-learning concepts of entrepreneurship education should be outlined in order to make best use of motivational and situational advantages.

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