

THE USE OF SIMULATION BUSINESS GAMES IN UNIVERSITY EDUCATION¹⁾

Zuzana BIRKNEROVÁ

University of Prešov in Prešov, SLOVAK REPUBLIC

Abstract. Rapid and deep changes in economics and business environment along with the dynamic development of computer art and communication technologies represent the main factors identifying the development in the area of simulation business games. These games may be considered a strange, content-determined group of simulation games. The description of their content specialties, basic elements, and possibilities of their use are the essence of our report. In the conclusion we present a short research carried out at the Faculty of Management of the University of Prešov in Prešov where we made an investigation of the students' opinions on the use of business games in the university educational process.

Keywords: simulation business games, process of education, future managers

One of the methods of university education on the basis of experience is the use of simulation games. A simulation game is most frequently defined as a technique securing an artificially created environment that copies chosen

features of real situations, which enables the participants observe the results of their decisions and react to them (Angelides & Paul, 1999). It is then possible to regard business games as a strange, content-determined group of simulation games. These games simulate a hypothetical business, economic, or managerial environment and thus enable an active social communication of the real players in quasi real business conditions.

When defining the term „simulation business game“ it is necessary to begin from the general level because the group of business games is actually a subset of a broader, more general group of simulation games, which are not only business-based. The term „simulation game“ is a compound phrase containing the terms „game“ and „simulation“. The term game is usually defined as a structured activity, in which two or more participants compete according to certain rules to reach a certain goal. Kirk (1997) similarly defines game as a set of activities which require performing tasks, playing assigned roles, and following conventional rules, which then leads to the achievement of the preset goals. Simulation (from Latin simulō) means to imitate. Simulation game can be thus defined as a set of structured and dynamic interacting particles which mutually affect one another for the purpose of reaching a certain goal. These relations have partly a pre-arranged character and partly they are randomly created by the participants of the game (Siegel, 1977). Simulation game therefore includes both aspects, the aspect of simulation represented more or less by a formal dynamic model of a chosen part of reality, and the aspect of a game represented by an active participation of real players. Simulation in a simulation game is then periodically interrupted for the purpose of evaluation of their results which are an outcome of the previous behavior and decisions of the players.

The most influential approach in the area of business education is Kolb's experiential learning theory. According to Kolb, learning is most effective when it is directed and controlled by the learner and based on the

learner's own practical experience, thus it has a concrete sense and meaning for this person (Pavlica et al., 1998). In accordance with their model, individuals learn effectively when they intentionally transform their concrete experience, reality and problems they encountered and are related to them by means of reflective (thoughtful) observation. They analyze the behavior which lead to an experience, human relations and surrounding factors which affected this experience, and for future use they create an abstract image – their own perception of reality. The whole process of learning continues with a phase of active experimentation which leads to the new experience that is to be analyzed, named, and understood.

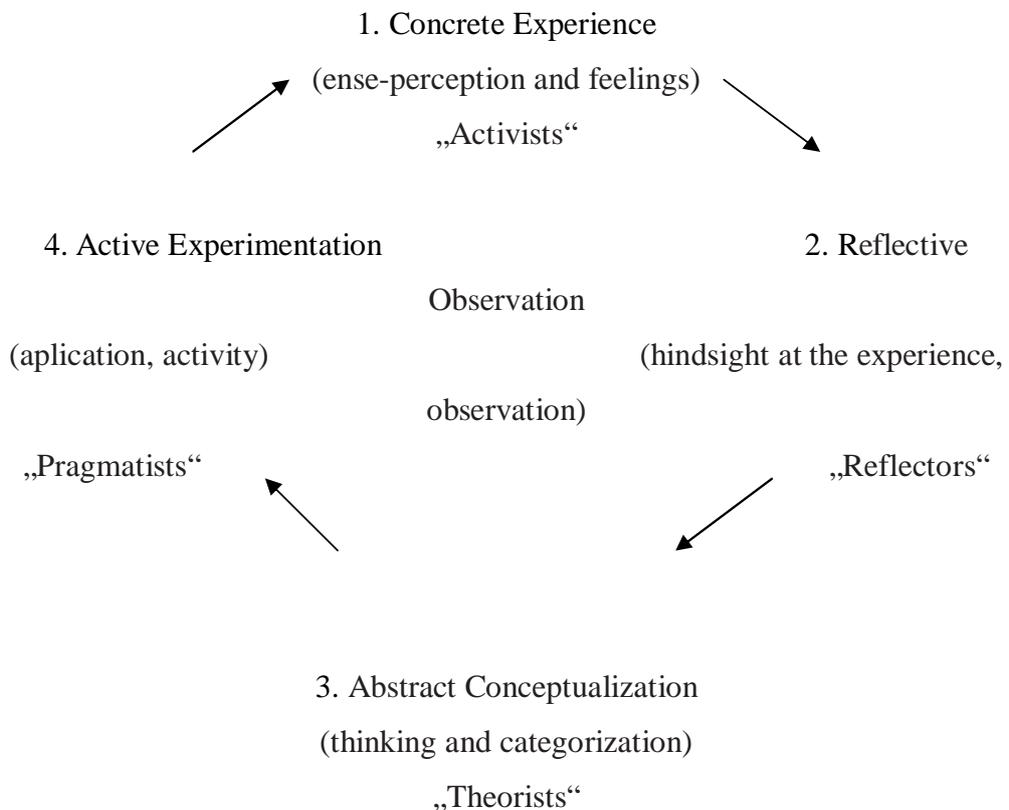


Fig. 1. Kolb's experiential learning theory (after Petty, 1996)

Effective learning assumes remembering the cyclic process of experiential learning. It is appropriate to always go through all phases of learning: experience and activities (a case study with a description of a situation where people from different cultures live together) followed by reflection (what happened, how individuals felt, who was/was not involved, what tasks were in the group activity, what was accomplished and how they proceeded, which questions were left unanswered, etc.). Reflection is followed by the development of conclusions from the experience, that is, theoretical conclusions about the theme or the process (procedure, ways of decision-making, etc.) created by the students. In this learning phase, students expand their knowledge by adding new information. Experimentation, questions, or tasks for the application of a concrete situation can warn the learners that even theoretical conclusions are „useful“ because thanks to them we can solve a problem and look for possibilities of their use. Having an opportunity to experiment is an essential „anchor“ of knowledge in learning.

According to the approach to learning, students are divided into four types: those, who gain information primarily from a direct empirical experience are so-called „*Activists*“ (they do not have a problem to participate in activities). Activists participate in new situations fully and without prejudice, they are open, understanding, and prone to excitement. They jump into new activities without thinking, their days are full of activities. They solve problems on impulse and react dynamically to new experience. They are sociable and look for contacts with other people. Sometimes they are inconsiderate when they try to assert themselves as the centres of attention.

Then in accordance with the „cycle of learning“ there are students who rather observe and from their observations they form their opinions about the world (so-called „*Reflectors*“). Reflectors keep distance, they observe things from different perspectives and different angles. They use various ways to collect data and they think them through before they arrive to the conclusions.

Once the collection of the information is completed, they analyze it thoroughly and reconsider the possible consequences. They are precise and thorough, and usually not very active. They create a calm, although quite impersonal aura around themselves.

Among students there are also „*Theorists*“ who create mental constructs for themselves. They use analytical thinking, they are capable of categorizing and comparing, and they like lectures and projects. Theorists examine problems step by step by a vertical and logically correct way. They tend to be perfect and avoid resting until they are certain that all things are arranged. They like analysis as well as synthesis, basic principles, theories, and models. Logic is good. They are not prone to being emotional, they are analytical and respect only rational objectivity. They treat problems mainly by using logic.

What is characteristic for „*Pragmatists*“ (experimentators) as learners is that they like taking risks, they verify and evaluate things on the basis of experimentation or practical realization, and their starting point when learning is the real world. Pragmatists like trying new ideas, theories, and techniques in confrontation with the practice. They approach new ideas positively and realize them practically. Their desire is to try all new ideas and inspirations in practice immediately. They act swiftly and skillfully when doing things they like. They are practical and realistic, having both feet on the ground. They like making practical decisions and solving problems. Problems are a challenge for them.

The essence of simulation business games is creating a quasi real environment within which the participants gain important experience for the following reflection. Simulation business games thus enable the development of all components of human capital (not just, for example, knowledge). The development of human capital is therefore more complex and it takes place on all levels. At the same time it is more effective because it stems from the

participants' own practical experience. They can contribute to the identification of possible problems in this area and to finding an optimal solution so that the key knowledge, abilities, and skills (whether existing or acquired) could be more effectively used when fulfilling the goals of the company.

Forssén-Nyberg & Hakamäki (1998) emphasize these basic features of simulation games: (1) every simulation game must be a reflection of reality; (2) a simulation game must involve an active social communication of live participants; (3) one of the goals is the evaluation of reality, self-evaluation, and reflection.

The first simulation games feature clearly results from Kolb's requirements. If an experience in the game should be the basis for further process of learning, it must be realistic, or quasi realistic, thus gained from a real environment or a reality very similar in relevant aspects. Such environment is created by the game rules. An advantage of simulated environment is its safety, which has usually a positive influence on the whole process of learning.

Basic components of a simulation game

It is possible to say that an own simulation game is a system consisting of certain elements and mutual bonds between these elements. Angelides & Paul (1999) identified the basic elements that create the environment of a simulation game. Game goals (the goals of the players in a game) define the victory in a game. They may be considered as a basic impulse which directs the player and keeps the game going (along with other impulses). The desire to win is an important motivation factor for the participants of the game.

The basis of every simulation game is its script, which defines its basic subject matter, content orientation, and initial conditions, and which concentrates on every important aspect of successful participation in a

simulation game. On the basis of the script, the individual roles are defined. The roles are persons or functions assigned to individual students, players (teams). They determine motivations, formulas for behavior, and relations to the other roles within a simulation game. The roles have their models in a simulated reality. There are three types of roles: (a) played roles – based on the game script, built in the course of the game, represented by live players who perform their actions and make decisions within their course; (b) simulated games – built in the course of the game, but not assigned to live players; their actions and decisions are simulated on the basis of simulation models or game rules; (c) pseudo-roles – not based on the game script; the roles with the purpose to fulfill the immediately needed function (for example, judges or technical experts).

The definitions of individual roles must progress in a close tie-up to create the rules of the game. These rules regulate the behavior of players, who act according to individual roles and situations that may come up during a game. However, they may also contain the conditional reactions from the environment, meaning they may express the actions of people which are not part of the game (simulated roles) but their reaction is relevant for the behavior of real players – played roles (Coleman, 1975). If the rules contain these conditional reactions, it is necessary to create them on the basis of the gained theoretical or empirical information. If the reactions from the environment are part of the rules, the creators of the game must have a clear idea about the set of possible reactions of the system to the stimuli that come from the live players (played roles). Simulation games use both types of these rules because one part of the environment presented within a simulation game is always simulated, and one is always represented by means of played roles.

Coleman (1975) defines 5 kinds of rules: (I) procedure rules – describe how to play a game, and define the way the game progresses. They are based on empirical observations of the presented reality and they implicitly involve

theoretical assumptions about functioning of the processes presented by the game; (II) rules that restrict behavior – oblige what players (individual roles) must or may not do. They help to define individual roles. They must be in line with the responsibilities of the individual roles in real life, imitated by the game; (III) rules defining goals – exactly define the goals of individual roles within a game. It is particularly important to make sure that the role is correctly defined in accordance with its goals and motivations; (IV) rules defining reaction of environment – specify the reaction of the simulated part of the game environment. They are directly tied to the simulated roles. These rules regulate reactions of that part of the environment which is not presented in a game by real actions of live players (played roles); (V) controlling rules – define the outcome of breaking of the rules by players (played roles). The goal of exercising the controlling rules is to ensure following the game rules and to clearly define the way of correction of their breaking.

Games are divided into a certain number of stages. Each cycle is further divided into several steps. The individual steps are collections of activities which progress in a certain sequence within one cycle, and thus push the game forward. The most typical is the cycle of four steps: 1) initiation – result of a concrete impulse. The players become familiar with the script or new data and information which are a result of the preceding cycle; 2) planning – takes place on the basis of analyzing the available information; 3) action – based on the decisions adopted according to the results from the preceding step, certain activities which should lead to the given goals take place; 4) evaluation – the last step of the cycle. Simulation is paused in order for the discussions over the results from the given cycle to take place.

After evaluation, a new cycle begins, and its first step is again initiation. The function of initiation is fulfilled by so-called impulses. They are events or problem situations which force players (students) to concentrate on a certain aspect of the simulated problem. Impulses may be initiated by the

teacher (lecturer of the game) or they might be initiated by the students (players) themselves by means of their actions. They may be prepared or spontaneous.

Angelides & Paul (1999) then divide games into system games and role-plays. System games focus on the mutual relations and relations among the elements of the economic, political, or social system, and players develop their own formulas for behavior within the defined roles. In the system of role-playing, players focus on the concrete real-world positions and relations among these positions. Ferencová (2008) defines role-playing as an active teaching method based on a script according to which the participant in a group should play certain roles. It is a very effective tool which requires a careful approach. Other non-traditional, innovative forms and methods of experiential learning in higher education are also described in works of Zahatňanská (2009), Ferencová & Birknerová (2009), and others.

It can be stated that there are many possibilities for an effective use of simulation business games for educational purposes. We include such business games in the process of education at the Faculty of Management of Prešov University in Prešov as part of the subject called Organizational Behavior.

Research

The research realized at the end of the term involved simulation business games which we included in the process of education within the subject called Organizational Behavior. The main objective of the research was to find out the opinions of Management students on this form of teaching. The questionnaire was given to 213 students of the fourth year at the Faculty of Management of the University of Prešov.

Question 1: What is your opinion on the teaching of Organizational Behavior by means of simulation business games?

Majority agreed that this form of teaching is a great contribution because it leads them to creativity. During seminars, they gained a positive image of themselves, self-assurance, and they learned how to resist constraining, to take more risks, to be more independent, and to be more self-confident. Besides motivation to creativity, they learned how to evaluate and assert themselves. When describing their answers, we can talk about the mentioned motivation to creativity, creativity in human relations, and creativity in values which support creativity.

Students learned how to motivate, develop their knowledge in meaningful units, support the development of independence, self-evaluation and responsibility, to develop self-assurance and self-confidence, the willingness to take risks when solving problems, and to develop individual abilities. They learned how to initiate the production of thoughts, ideas, questions, as well as how to create a creative atmosphere in a group, where also humor is applied.

Question 2: Were the seminars carried out by means of simulation business games a contribution for you as future managers? In what?

Majority of the respondents agreed that during one term they gained a great number of new experience and knowledge, and they adopted new principles which can be used in real life. We summed up the most frequent answers to the question what they liked about the games: (i) Active participation of each member of the group; (ii) Respect for the other members of the group; (iii) Open manifestation of own feelings and opinions in front of other students; (iv) Providing a feedback, backward information about how one member of the group is affected by the behavior of other members; (v) Experimentation with own behavior on the basis of use of the feedback information. Self-understanding by means of self-reflection as well as other people (so-called social feedback); (vi) Everyone has a right to stop the action

in a group and ask for explanation if something is unclear; (vii) Everyone has a right to be given audience. Other students listen to every person talking; (viii) If someone wants to participate in any activity, it is their right to do so; (ix) Students learned how to speak briefly and to the point, not avoiding the actual topic; (x) Members of a group speak for themselves. When forming their thoughts, they differentiate between their own opinions and thoughts, and opinions and thoughts of others; (xi) They also learned how to speak directly. If they want to announce something to someone, they name the person and speak to that particular one. They do not speak in the third person; (xii) Members of a group differentiate the activity from the person, they do not react to the person but to their demonstration. Information and reactions are related to the activities, action, and opinions, not to the person as such; (xiii) There is a rule of discretion and information confidentiality in a group. Everything mentioned within one group is their shared property.

Question 3: Which methods that were used in seminars do you consider most interesting?

Majority of the respondents stated that the most interesting for them was the practice in communication competence. They gained experience from the exercise of non-verbal communication, for example face-play, posture, and look, as well as verbal monological and social communication. A well-spoken dialogue presumed respect for the following requirements: interconnection of ideas, no enforcing of topics, approximately the same time entry of participants, no interruption when speaking, no humiliation, no ironization, no sermonizing, toleration for other opinions, no blaming, no enforcing of spontaneous emotions, etc. Students appreciated the exercise in dialogue communication and they also made a motivating evaluation of group discussions, which can be related to any topic and which build closer relations. They learned not only to express themselves in a clear and well-

spoken manner, but also to listen, understand, and accept opinions of others.

The respondents also stated how contributive is gaining assertive skills by means of the method of assertive „obligations“ through which they gained control over their behavior because they learned how to give a brief and honest explanation for the causes of their behavior. They learned to respect personal rights, avoid confrontation, work on a compromise which would suit both parties, and also control own emotions.

Conclusion

At last we can conclude that business simulation games may be used as a tool for development of human and total intellectual capital of a corporation. If respecting the mentioned principles, they can be an effective tool for increasing the human capital of the corporation management. The goal of the games is to create a competition atmosphere for cooperation of students and their abilities to organize team work, to form visions of fictitious corporations, to concentrate the effort of co-workers on sharing mutual values, to gain and process information, make decisions, give tasks and motivate, to deal and negotiate. Students actively participated in the process of education, they learned new knowledge, skills, and abilities, reaffirmed their previously acquired knowledge, changed their values and attitudes, and they were able to include the newly gained knowledge in the context of real life. Seminars enabled them to understand human behavior better.

In order for simulation games to be successful, during one term, members of the groups had to create harmonious relations by means of getting to know and supporting each other. There were constant group processes among them. Each student could, on the basis of experiential learning, verify how difficult is to influence or even change their own behavior in a group. Attendance at the simulation business games enabled students to adopt new, better group behavior. The games are an example of complex education of a

quite strange kind which involves new knowledge, understanding, new attitudes and skills. The non-traditional way of teaching enabled each member of a group to experiment with their own behavior. Each student could then verify how the new elements influenced their behavior. Active participation in the games during a seminar enabled students to uncover the relation between their internal problems and difficulties they experience during interaction with people. Members gained a deeper view into their social performance and thus they realized how their behavior affects other people. The primary goal of simulation games was to achieve that the participants change their behavior in such way that would make them more successful in social situations. We believe we reached this goal.

NOTES

1. A version of that paper has already been published (2010) in *Manažment v teorii a praxi*, 6(1), 4-14.

REFERENCES

- Angelides, M.C. & Paul, R.J. (1999). A methodology for specific, total enterprise, role-playing, intelligent gaming-simulation environment development. *Decision Support Systems*, 25, 89-108.
- Coleman, J.S. (1975). Social processes and social simulation games (pp. 180-247). In.: Greenblat, C.S. & Duke, R.D. (Eds.). *Gaming simulation: rationale, design and applications*. New York: Sage.
- Ferencová, M. (2008). Hra a hranie rolí v procese vzdelávania budúcich manažérov (pp.278-284). In.: Lačný, M. & Dudinský, V. (Eds.). *Medzi modernou a postmodernou IV. Súťaživosť ako kultúrotrvorný fenomén – limity efektivity*. Prešov: Prešovská univerzita v Prešove.
- Ferencová, M. & Birknerová, Z. (2010). *Experiential learning of university students*. In.: Conference Application of Management Theory in Practice IV. *Leadership styles and future managers*. Bratislava:

- Ekonom.
- Forssén-Nyberg, M. & Hakamäki, J. (1998). Development of the production using participative simulation games: two case studies. *Intern. J. Production*, 56-57, 169-178.
- Kirk, J.J. (1997). Thrainer's use of games: some preliminary explorations. *Simulation & Gaming*, 28, 88-97.
- Pavlica, K., Holman, D. & Thorpe, R. (1998). Manažer v roli „praktického autora a mediátora učeni“. *Psychologie v ekonomické praxi*, 33, 89-96.
- Petty, G. (1996). *Moderni vyučování*. Praha: Portál.
- Siegel, G.B. (1977). Gaming simulation in the teaching of public personnel administration. *Public Personnel Administration*, 6, 236-249.
- Zahatňanská, M. (2009). Zážitkové učenie a jeho možnosti v pregraduálnej príprave (pp. 164-168). In.: Editorial staff: International Scientific Conference *Rozvoj a perspektívy pedagogiky a vzdelávania učiteľov*. Prešov: FHPV PU.

✉ (Ms.) Zuzana Birknerová, PhD.
Katedra manažérskej psychológie (Managerial Psychology)
Fakulta manažmentu (Faculty of Management)
Prešovská univerzita v Prešove (University of Prešov in Prešov)
Konštantínova 16
080 01 Prešov
Slovak Republic
E-Mail: zbirknerova@unipo.sk