DEVELOPMENT OF MANAGEMENT COMPETENCE IN SECONDARY EDUCATION THROUGH GAMING METHODS

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Abstract: The aim of the paper is to propose gaming methods useful for secondary education to develop management competencies of students regarding their future management jobs. The proposal of games useful to increase management competencies in secondary education is preceded by an analysis of primary and secondary references describing the theory of gaming methods and their principles with the attention paid to management games, the learning process and education through management games with a special regard to teaching economics.

A pre-research was conducted to find out if management games are attractive to students. Possibilities of using gaming methods related to the development of management competencies in teaching economics at secondary schools were conducted through interviews with the teachers of economics. The results of the research on using gaming methods in education related to management competencies was used in order to create games as an important educational tool increasing management competencies in secondary education in economics.

Keywords: Management games, education and learning, gaming methods, managerial competencies.

INTRODUCTION

The management theory became a science in the 20th century developing due to the development of large enterprises in the USA under the influence of conferences and workshops focused on management, marketing, cultural policy, and, social and political science in general. A limited number of professional scientific papers and publications focus on specific decision-making processes at organizational, strategic, managerial and operational levels Hagoort (2009). The training of would-be managers is difficult as the learning process makes it difficult to set individual goals without specifying the science framework.

Together with the development of the industry revolution, it is said by the professional public that not only economics should focus on the implementation of increasing management competencies, because the ability to work with others, organize themselves, time and staff is a key factor in success in a professional career. The development of such abilities is influenced by genetic predisposition, social and family environment, including education, in which the individual is located and which is shared. University education promotes interactive forms of increasing managerial competencies, such as open discussion, presentation of different topics, case studies that support the students' ability to analyze situation regarding particular working experience. Another way to develop managerial competencies is to play games, such as management games that simulate real working experience of the managers. As an illustration, the students of law must have excellent knowledge of the law, future software engineers are expected to design their own IT applications, the students of medicine must go through a lot of practical training (Kulyk, Škodová Parmová, 2017). Generally speaking, the students of such fields meet the activities that are vitally important for their

future jobs. However, this experience is fundamentally impoverished for the future managers if classical academic teaching methods are used, and it is so easy to understand the efforts of management education institutions to include gaming methods into the educational process that as an attractive tool for dealing with this specificity Caha (2017).

However, would it be possible to use it in secondary education?

The most important aim of the paper is to suggest gaming methods for increasing management competencies during secondary education at economics vocational schools

The proposal of the methods is preceded by an analysis of primary and secondary references. Such outputs describe the theory of gaming methods and their principles with the attention paid to management games, the learning process and education through management games with a special regard to teaching economics.

The theoretical part is the first secondary aim of the paper. To achieve the aim, analyzes and summaries of relevant knowledge accumulated by the professional community during the fifty-year history of management games, simulations and game methods were used. In this area, we focus in particular on the validity of the use of gaming methods as an alternative to traditional learning methods, such as frontal teaching.

Another secondary aim is to identify if gaming methods are an attractive learning tool of increasing managerial competencies. To do that, a questionnaire survey among a hundred of random participants was conducted from April, 11th to April, 22nd in order to find out if the participants are interested in management games and if they thing the games can improve management competencies. The questionnaires were partly based on Josef Koěí´s work published in April 2016. The questionnaire was carried out through vyplnto.cz. It included six questions. Two thirds of the participants were women, one third of them were men (54 students, 42 economically active persons and 3 economically inactive persons). More than a half of the participants said the management game helped them to

improve their decision-making skills, 38 of them also reported improved work coordination in line with time management. In the research, forty participants reported an improvement in the concept of a long-term strategy and 36 participants noticed changes in the organization of work. In addition, there are answers such as improving the planning of finances and dealing with time as a precious thing. The participants also noticed better spatial imagination, drill and concentration. According to the respondents, the game improves the ability of general overview, self-development and self-reflection.

The output of the questionnaire survey revealed that the proposal to include gaming methods into the secondary education in order to improve management competencies is definitely relevant.

Another secondary aim was to identify the possibilities of using gaming methods in teaching at secondary schools in order to increase managerial competencies.

Due to the character of such secondary aim, the authors chose the method of qualitative research in the form of qualitative semi-structured interviews. The reason for this choice was the fact that the choice of questions calls for a deeper understanding of the problem requires a description of experience and opinions of the participants.

In his book, Disman (2005) describes some features of qualitative research different from quantitative research. The qualitative survey uses inductive logic, enabling detailed information about the phenomenon being investigated, the research file is not as extensive as in the case of a quantitative survey, as a result of which the acquired data cannot be generalized and relate to a particular population. Based on the pre-created interview scenario, a number of qualitative issues were addressed, which were presented to the participants.

The participants were the teachers of a vocational school (Støední škola služeb, s. r. o) in the town of Uherské Hradištì, teaching economics in the advanced study of Business. They teach the following subjects: Economics, Marketing and Management, Accounting and Taxes, Administration, Written and Electronic Communications.

The participants were chosen in view of the fact that the representatives of this group can adequately respond to in-depth questions about the experience and views of the application of gaming methods in the teaching of economic subjects. Respondents were pre-selected and addressed with a request to participate in a qualitative survey. In total, five in-depth qualitative interviews were conducted with three men and two women. Through the questionnaire survey, the strengths and weaknesses of the use of gaming methods in the teaching were identified. For the survey, twenty students of the second year of advanced study of Business at the vocational school in Uherské Hradišti were addressed. During a lesson of Marketing and Management, the games as proposed in the chapter Proposal of Gaming Methods for Increasing Management Competencies during Secondary Education were tested.

Gaming methods as a tool of education

Gaming methods are not exactly defined in the system of didactic methods. However, a game is defined. By Plamínek (2014) a game as a possible method of education, represents a useful common tool of dealing with different scenarios, The aim of playing games in order to solve model situations is to understand and to acquire a certain process, to emphasize the essence of acquired theoretical methods and to practice different aspects of acquired practical skills.

Regarding this, the aim of games is not to get a factual, specific solution, but to get a way of dealing with a scenario in invented environment.

The reason is primarily that if the model situation, such as those involved in education in the game, reflected the reality of their day-to-day work too much, certain elements would coincide with their actual working lives and job problems, and playing the game could be too related to diving in expert details, in realities and participants (as experts on the subject) would have a greater tendency to speculate on accuracy, without keeping things in perspective Evangelu, Fridrich (2009) and Porubèanová, Gáborová, Goriup (2012).

The use of games focused on modelling the problem includes a shared assignment, as stated by Plamínek (2014), leading participants to joint solution search. It supports working together, division of team tasks, group decision making, creativity, facilitating group discussions and meetings, and other managerial competence.

The division of roles within the team is spontaneous in most cases, developing during the game based on the participants' personal traits, developmental action, and understanding the nature of the game. Examples include, for example, games simulating wreckage on a deserted island and other scenarios, with no definite solution.

The second type of games includes games with different interests that are played with predefined roles assigned to players. All the players are familiar with the context of the game; however, each player knows confidential information, related to his/her role following a special interest. The participants must defend their interest.

These games are used if the training goal is related to the training of negotiation, communication, mediation or other managerial skills. Participants can learn to deal with disputes diplomatically not only in personal life, but also at the workplace in solving work tasks. Examples of such a game include auction simulation, bargaining, etc.

In the context of classifying didactic methods in education, various game methods are usually classified as theoretical and practical methods. In addition to passing on theoretical knowledge, these methods also focus on acquiring the basic prerequisites and competencies that are reflected at work. Classifying the didactic methods by educational needs, games are related to methods aimed at defining the problem, such as situational and staging methods, but also to methods aimed at solving the problem, such as economic games, Rachow (2005) classifies gaming methods according to the content of games and ongoing activities. Classification is based on input factors, i.e. on the basis of the activity criteria that the participants of the training action will perform, and on the learning objective to which the gaming method is oriented. The identification of the educational goal and the associated optimal choice of game methods to meet the goal is a key process in the preparation of educational activities.

Educational objectives on a general level are often the need for setting up a new team and the development

of a working team, development of specific managerial competencies of participants, diagnosis of the individual or the whole team and development of socio-psychological skills such as trust, communication, tolerance, coping with stress and stressful situations, etc.

Hermochová (2004) divides gaming methods based on activity orientation, i.e. sorting is mainly based on the target activity and the purpose which the participants perform according to the educational goal, such as self-realization, team development, development of cognitive functions, establishing of communication, etc.

Unlike the multi-criteria classification according to Rachow (2005), the classification according to Hermochová (2004) does not define the nature of the methods used. This is a classification based only on output factors, not on input factors,

Ondrejièka, Betáková (2012) also classify games in a similar way, describing and categorizing games based on their purpose, e.g. according to the stage of the course, the activities performed, the educational objective, etc., They do not use a unifying criterion.

Lajèin, Frankovský, Štefko (2012) define the following categories: get-to-know-you, warm up and contact games, trust games, entertaining competitions, initiative games, team games, communication and cooperation development games, reflection games and final summary games. There are also games suitable for the beginning of a course and educational event, but also to end or to get acquainted, to deepen the trust, to get feedback.

Wallenwein (2003) classifies gaming methods according to the part of the course, e.g. methods classified according to learning conditions. The selection is similar to the above mentioned Lajèina, Slávikové, Frankovského, Birknerové (2014). However Wallenwein (2003) mentions more specific methods including examples of specific games included in the program on the basis of different phases.

With regard to the choice of a suitable gaming method, the teacher should always rely on grading-oriented classifications based on the educational objective, content of the method and the activities that the participants of the educational or experiential event will

perform. Then it is possible to combine methods with game methods, e.g. according to the stage of the educational course, according to the used material, etc. It is equally important to know the character of the game group in advance.

MANAGEMENT GAMES

Management games are usually designed to reflect ourselves and our positive and negative traits. At work, we control ourselves and we do want to stay in the character, but we do not play anything real in the game, just playing! And that's why our traits are revealed easily, unnoticed, and then we are surprised by the reaction of the neighbourhood, as noticed by Oupic (2006).

Teaching management at secondary schools is still based on theory a lot, partly converted into real working experience. Practitioners have voices saying that students do not have practical experience to solve new problem situations. On the other hand, contact with practice is both financially and time-consuming, not completely self-realizable. It is hard to imagine that enterprises would enable pupils to look into the real operation of their business. For capacities, it is virtually unrealistic for most institutions and, from the point of view of intellectual property protection, is almost unlikely given the fact that information and resources are one of the most valuable assets of entities. Modern society calls this phenomenon as a simulation of reality, in managerial and economic practice, they are referred to as management (business) games Feichtner, Davis (1985) and Lajèin, Slávikova, Frankovský, Birknerová (2014).

Management games are a subset of a much larger group of simulation games that focus not only on management but are used in many other areas, such as logistics and transport, aviation, etc.

In foreign references, management games are referred to in different ways, such as computerized business games, see Biggs (1990), business games and business simulations, and see Teach (1990).

The term management game is understood in two levels. As the first level, there is the concept of a software application and game model. In the latter case, the concept refers to an instance of the management game -

simulation, e.g. organizing in the form of an activity for a group of participants managed by the administrator, i.e. the "playing" of one game.

Managerial games have evolved from war games due to the development of technology, especially computer technology, mathematical methods, economic theories of games and system theories. It offers opportunities to bring pupils and students closer to real-life situations and to develop their managerial competencies as seen by Gentry (1990) and Škoda (2009).

Education and learning through management games

Similarly to education of adults, mostly based on voluntariness and initiative of a participant in the game, volunteering is key in the process of play, and play is a free choice for the player. In adult education, gaming methods take place in the system of andragogical didactics, most often reflected in activation methods. However, the game should be understood as a more extensive concept than a didactic method. A challenge, a way of dealing with different life situations, gaining new experience and competencies are the important parts that might motivate a majority of adults to be actively involved in the game.

Unlike children games, it is necessary overcome partial obstacles and solve complex problems, tasks, and occasional situations to sucessfully finish the task and reach the aim. The key activity is in particular reflection, backward look at the activity being performed, its evaluation and analysis Newbery, Lean, Moizer, Haddoud (2018). A game is understood as a means and tool that gains an educative and self-realization function by appropriately grasping the reflection.

Management game, together with case studies and some other methods, such as internship Graf, Kellog (1990) belongs to the group of experiential learning, where participants are "thrown" into the situation and on the basis of experience they gain knowledge different from what they would gain if they solved the problem theoretically. There are many different types of management games.

By Pasin, Giroux (2012), a comprehensive division of management games called *top management games* includes

all aspects of organization, including strategic decision making. These games are very challenging for preparation, time and play, and are often more complex in a way of understanding. *Functional games* focus on a specific area of the company and *concept simulations* on the way of decision making Jahangirian, Eldabi, Naseer *et al.* (2010).

Management games are supposed to divide players into teams that play a role. "*Playing a role in the game provides players with experience offering opportunities to develop talent, to gain knowledge and skills* „talks (Halek, 2000, p. 7).

The team character of the management games emphasizes interaction as active cooperation of the team members and the process of communication, competition and cooperation between teams. The goals of different applications of management games can be different, almost always showing evaluation and self-reflection.

The games are knowledge-demanding for players. In the game, they must demonstrate their knowledge of various economic disciplines such as business management, accounting, management, together with knowledge of culture and legislation, including social, psychological and social psychological knowledge, such as soft skills (communication, motivation, time management, etc.).

Gaming methods belong to a group of active teaching methods. Participants' activity is a prerequisite for their realization. The course of the game forces players to act actively, to solve problems, to make decisions, to communicate and to work together in teams. They have the ability to motivate and involve participants more than other teaching methods. From the educational point of view, it can be pointed out that management games are basically "no risk", i.e. none of the participants will be significantly punished for wrong decisions as would be the case in a real, practical world. Absence of real dangers allows participants to increase the level of reliability in a less stressful but still stimulating environment. It offers the possibility of repeating similar situations and thus speeding up learning. Unlike real life, it is possible to stop the game and reflect or reassess decisions or repeat certain situations and then evaluate the effects of alternative choices.

The dynamics of management games allows students to experience a time horizon, offering the possibility to change their minds and systemic thinking. Participants quickly get feedback, which is rarely possible in real life. The games help pupils develop managerial thinking, decision making and skills, such as the ability to solve complex problems, manage strategic decision making and behaviour, including team collaboration and work organization.

They enable participants to develop a global perspective, try real-life learning and get close to the reality of a competitive business world Chapman, Meuter, Toy, Wright (1989). The participants are active throughout the learning process, they gain a sense of integration and a comprehensive decision-making process, and they are responsible for their own learning.

However, there are some disadvantages of management games. A good level of preparation of teachers is vitally important. The teachers should be able to answer questions and to explain the technical aspect of the realization of the game Keys (1990).

Generally, players can "experience" the game and, if they are not successful, they may fail to feel frustrated or feel demoralized. This is related to the need for risk awareness, i.e. pupils may not perceive the game as a reality, and they may not have to play seriously and thus lose motivation to play.

Management games are one of the ways to train the abilities and skills of current and future managers. Management games are regularly included in the education process, especially if an active approach of participants is necessary to solve the problem Hauge, Pourabdollahian, Riedel (2013).

Player's ´activity is a required input. However, the course of the game itself forces the participants to act actively, to communicate, to decide, to deal with the problems, to negotiate and to work in teams, as stated by Maxa (2011).

Mužík (1998) notices, that, based on observations and his personal experiences, the most efficient methods of activation include role-play, project method, dialogical methods, but also a lecture.

Liveèka, Kubálek (1978) report an advantageous effect of using gaming methods in education, considering the high level of participation, interest in learning and achievement of educational goal and good memorization of acquired knowledge.

A game called "Ropeway" is an interesting example of a management game. It is a strategy team game played inside using a special construction kit. The players are supposed to build a ropeway and to transport an object (such as a package of paper) from one point to another.

Using this game in education promotes team work, communication, assertiveness, dealing with conflicts and negotiation. The participants can practice creative and logical thinking, decision-making skills, transferring their skills for successful management of the management cycle, and playing roles in the management team.

The game offers a variety of solutions and a combination of implementation. Since it is a game with building and construction elements, it is very likely that it will be appropriate to involve all members of the team, both active and passive, during this process, which positively influences the integration into the team and working together Mužík (2011).

Management games useful in secondary education

Management games have developed a lot recently. The first management game was called Top Management Decision and it was created in 1957 by American Management Society Horèièka, Jelínková (2013). Current management games are related to current problems of the modern society. Their advantage is in the sophistication and progress in information and communication technologies in line with current trends.

Management games useful in secondary education are listed below. Some of them are accessible on-line; some needs an upgrade, such as entertainment games.

- **Papa Louie Arcade** (http://www.papalouie.com), offers simplified simulators of real business, mostly in gastronomy.
- A game called **The Waitress** is a simplified simulator of a job of a waitress- Its aim is to show how demanding is such job.

The above mentioned games enabled players to create orders and deliver to the customers. There are some games with a different story. The players can play different roles. For example, Dina Island, released September, 24th 2002, by Monte Christo Multimedia, is designed especially for children but also for adults. It offers possibilities for different age groups appropriately integrated into one game. Younger children appreciate natural scenery, dinosaurs, and funny attractions Moroney (2003). Also, **Zoo Tycoon** and **Zoo Tycoon 2** are similar to Dino Island. Dinosaurs were replaced by animals. In this game, the players must build a perfect zoo, economically and financially self-sufficient. The purpose of the game is to buy animals, elements such as fences, enclosures, animal feed, but also the purchase of buildings and the payment to employees.

Analysis of interviews with teachers of economic subjects

The analysis and evaluation of qualitative survey results carried out with five participants. The participants were the teachers of economics at a vocational school (Støední škola služeb, s .r. o) in Uherské Hradištì.

Scenario of the interview discussed the purpose of use of gaming methods, useful to develop management competency, in secondary education.

The main importance of the games in secondary education as seen by some participants is that they represent a different world for the pupils than the world they see every day. In the fictitious world they are able to better escape from the reality of possible problems and situations and they can reach goals more easily. Other participants see a certain element of enrichment in education as the most important purpose.

In general, the participants agreed that the contribution of gaming methods in secondary education is its fun, effectiveness, leading to a better way of acquiring experience, skills and abilities, and contributing positively to individual growth and development of teamwork.

The participants often thought that the benefits of playing games in education positively affect both the area of education, and personal life and leisure activities.

The key contribution of game-based methods is also the fact that through games it is possible to play different roles of different behaviour and actions than we do in our daily work and personal life. The participants reported that they often use Icebreakers and Construction tasks.

All five participants reported that they use gaming methods in secondary education with respect. They see the purpose of games in the fact that games offer the opportunity to solve the problem in relation to the learning process, i.e. games effectively lead to the acquisition of new competences and they reveal hidden personal qualities and skills enabled by other roles and behaviours to support cooperation and to define new roles within a team.

Proposal of gaming methods for increasing management competencies during secondary education

Examples of games implemented into teaching by the authors of the paper are listed below. The games were used in lessons of Marketing and Management at Støední škola služeb s. r. o in Uherské Hradištì. The lessons are a part of an advanced course of business.

- **Mind map** for repetition and deepening knowledge of planning, setting goals and priorities in the work of the manager.
- **Brainstorming** in the subject of "Communication and presentation skills of a manager"
- **Brainstorming in combination with the mind map** in the subject "Basic principles of organization".
- **Venn diagram** for "Control and Controlling"
- **I.N.S.E.R.T.** for "Creating Business Processes, Management Theory, Models and Approaches**"**
- **Discussion web** for the topic of "Delegation".
- **Cube method** in the topic of "Corporate culture, its structure, level, creation and change".
- **Merry-go-round** as part of practicing and repeating the topic "Stress in the manager's work, how to deal with him and how to manage it"

- **Method 6-3-5** in the topic "Motivation and Stimulation of Workers**"**
- **The role-playing game** on "Communicating with a Difficult Partner, Assertiveness and Conflict Management""

There are also gaming methods that are longer, and rather than hard skills, they develop basic soft skills such as team leadership, coordination, responsibility, decision-making in stressful conditions, such as:

- **Abigail:** help the participants focus on value orientation, to clarify their own opinion, to support the ability to negotiate, to defend and to cooperate with other team members.
- **Colourful tower:** a game is focused on the development of team communication, self-realization and ability to negotiate. The role of the game should be a division of roles with a focus on team management and team building. The game affects creativity, constructive and logical thinking, and the specificity of the workflow of other teammates that may differ from one another. This gaming method appears to be simple, but it is necessary to think constructively while playing, analyze the past moves, talk and concentrate on negotiation and decision making of colleagues, interacting with the team and sharing communication. Within the game, an analytical approach to solutions, mutual help, coordination and teamwork, planning of context, ability to negotiate, and constructive questioning are necessary.

Results of the questionnaire survey on the use of gaming methods in experimental teaching aimed at increasing managerial competencies in secondary education

Nearly half of the girls liked the gaming methods. They were interested in the games and rated them positively. Gaming methods reflect real practice. Teaching using game methods is more critical in participants' opinion, as a modern form of teaching. They consider low interest in business to be a disadvantage.

Also, nearly half of the boys liked the gaming methods. The lessons were more attractive with the games. The boys consider low real value of reflecting the real working experience to be a disadvantage.

Both boys and girls saw the fact that the games did not motivate them to do business after graduation.

The boys and the girls also agree that gaming methods in learning to establish contacts increase team collaboration skills, improve communication, promote self-esteem, self-confidence, self-defence, argumentation, self-empowerment, decision-making speed, empower empathy and creativity performance of managerial functions.

CONCLUSIONS

A game in general might be considered to be for children; however, it is important for adults too.

Although the game is seen as some kind of a reward that can only be done after work done, at leisure, after completing tasks and responsibilities (both children and adults), in many cases it can be a game that helps us overcome problems and difficulties in learning, acquiring new skills and experiences, overcoming a problem and dealing with a difficult situation.

In the 21st century, game methods and management games are one of the most attractive teaching methods. They perfectly connect quantitative capacity in the field of business economics with decision-making abilities in the field of management and with the field of team work and management of human resources in management psychology.

Being a successful manager is not an easy task nowadays, mainly due to the ambiguity of the content and the mission of this profession, influenced by the disharmony of economic profit and social significance. A manager must be able to absorb skills, acquire new knowledge and skills, build good interpersonal relationships, strategically plan and think, and promote a good name and knowhow of the organization.

One aim of the paper was to characterize gaming methods and their use in secondary education. A partial objective was reached by a study of the theory of the issue through different sources of both andragogy and the practical use of gaming methods in secondary education.

These sources revealed the fact that the game provides a safe learning environment with the ability to repeat and practice the situation, it teaches system and abstract thinking, helps to attract players and engage them in learning, develops the personality of the player, minimizes costs and maximizes possible benefits. It also enables meaningful experience in time and space that can be transferred from the past to the future.

As notice by some references, a game might be considered to be for children seen as some kind of a reward that can only be done after work done, at leisure, after completing tasks and responsibilities (both children and adults), in many cases it can be a game that helps us overcome problems and difficulties both at work and in personal life.

Zapletal (1996), Huizing (1971), Wolf, McCoy (2008) and other authors discuss games in education and development. In a broader sense, they understand the game as a source of entertainment and a means of rest, but also as a self-realizing, educational function and an alternative to fulfilling various professional, personal and educational needs.

A qualitative survey proved that games are a part of the teaching process of education and development of the participants (secondary school students). The games develop soft skills, the ability to work together and self-realization of the individual. They create space for creativity, finding new solutions to the situations and overcoming oneself, discovering new competencies.

Gaming methods, management games, and simulations consist of four main components: role assignment, expanding information (open and/or secret), stimuli through which participants are encouraged to respond, and responses to participants' activities. Basic information and suggestions are usually the basis for a simulation exercise scenario. The game, for example, appears in didactic simulation methods, playing roles, didactic cognitive methods, problem solving methods, and so on. As noticed by Rachow (2005), Hermochová (2004), Wallenwein (2003) and others, gaming methods were used gaming methods are used in secondary education in order to increase management competence.

As secondary education in economics has some specific elements, games used in secondary education should be specific, carrying out different function compared to games for children and for adults.

The psychology is also related to a number of barriers as the secondary school students feel towards playing games. The survey revealed that there are barriers mostly at the beginning of the game influencing low motivation, quite often due to low self-esteem, shyness, and the belief that playing is intended for children only.

The topics of importance of games in secondary education for increasing management competencies, their contribution, the relation to didactics and andragogy were confirmed by a qualitative survey among teachers of economic subjects at the secondary school in Uherské Hradištì, who deepened some of the theoretical knowledge and also enriched the examples of using gaming methods from their working experience.

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