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## Decision games in a real and a virtual world

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*Imagination is more important than knowledge  
Albert Einstein*

Many of us have had their first business experience as a result of games. Monopoly is the obvious example of such game with a determined set of rules. Some of us can have had our own make-believe businesses, playing business the way children play house. In such games rules are less stable and may vary, depending on the children involved, their relationships and moods.

First type of games - with well determined set of rules, known to all participants, are time-consuming during production, but much easier to manage during the actual play. In case of any uncertainty the players can consult a game manual, and always find an appropriate rule to apply (unless the game has been poorly crafted). However, the second type of games make an opportunity to practice some real life problems; where the rules are scarce and may change during game. Is it possible to bring this factor of uncertainty into educational games? And how to do this in computer games?

### Situation

You are a project manager. Your firm have won a contract to produce software for a module of a time and attendance system. The system is being prepared for a large organization by a well known company, let's call it TimeTrigger. Recently, due to a schedule change, they have required you to use a solution your engineers consider insecure. Your main specialist has developed a better and more dependable approach.

You are at a meeting with the project manager from TimeTrigger. You present him the solution proudly. Surprisingly, he refuses to use your new approach. Demands that you use the insecure solution, is not willing to listen to any reasonable arguments. Threatens to withdraw from the contract unless you immediately agree to performing your job according to their specifications.

What is your course of action? Make a decision within the next 30 seconds.

- Do you agree?
- Do you need more information?
- Do you want to call your specialist and consult him?
- Do you look for right decision in business manuals?
- Does the situation look similar to anything you experienced in your career?

### Analytical Decision-making

Many of us are quite comfortable when making a well-balanced, reasonable decisions, based on certain set of rules, calculated value and probability of expected outcomes. We involve a lot of analytical thinking to arrive at a best possible decision. Such analytical decision making model should succeed, on condition the environment is stable, information fully dependable, the rules clear and all the parties involved follow the rules closely.

And what if there are a lot uncertainties involved and you have only 30 seconds to make a decision?

### Intuitive Decision-making

If you were able to make your 30-second decision in the situation presented, you probably have some experiences gained on the line of business negotiations and posses the skill of intuitive decision-making. Your experience allows you to recognize similarities to earlier situations, typical patterns of cause and effect. Therefore you did not need a lot of analytical thinking and reasoning. Even if you have never been in a situation exactly the same as presented, you are more likely to know what to do, based on previous experiences and patterns.

In some real-life situations people can use techniques they have learned form manuals at school. Provided they have enough time, information and the situation fits some theoretical pattern. They just need to apply the convergent thinking (very useful when solving problems that have a single correct solution). But what can they do when the situation gets more hectic? How to prepare business students to act adequately in various business circumstances?

The above is just an example of problems students may practice during educational games. Whether in a virtual reality or in a classroom.

*We can't solve problems by using the same kind of thinking we used when we created them.*  
*Albert Einstein*

## Learning through games in the real world

No business is risk-free. Some people point out spectacular success of businesspeople who took enormous risk and did something revolutionary, against the common business knowledge and rules. However, you can also find businesses that went bankrupt due to excessive risk. How to learn whether certain risk is excessive, or acceptable?

Case study method is one of the best methods I know to teach business, especially in e-learning environment. But is it enough? As mentioned before, success in business management does not always result from applying rules. Even if we are able to set some useful examples, they are often contrary one to another. Therefore, none of them can be treated as universal.

It is hard to find substitute for experience of the real thing. However, it can be hard to come by and may come to a bitter end. Fortunately, decision-making can be practiced and refined while playing games. Can people really learn business this way?

Some psychologists define playing as a natural method of learning. We play because we love entertainment and good laugh, but during the game we also learn certain behaviours and skills useful in everyday life and job. Actually, we learn “house” mainly through observation and playing, not by any formal method. And many of us excel in this area all the same.

Some students find the opportunity to play while learning very stimulating. They immerse in the reality of a game. However, one must be prepared to meet some reluctance as well.

Sometimes during trainings I ask students to classify various criteria of a matter we discuss, and afterwards negotiate a common classification in each group. The ones who manage to persuade other learners to a classification most reminding their own receive small rewards. There are groups that take a lot of time and energy to fulfil the task. Students try to convey best reasoning to support their decisions, discuss and argue with real passion. But there will always be a group who does not want to play with such dedication. They may even come to an immediate agreement based on a simple statistic. They calculate mean values for all items and this way quickly come to a common classification.

One of the problems with learning through games with well-defined rules, is that we are all aware of the artificiality of the situation. Therefore some of us refuse to get truly involved. Others may find the game interesting, but fail to transfer the knowledge into their jobs. I remember taking part in a game called “Disarmament”<sup>1</sup>. During the game participating teams would make statements as to the level of disarmament they were going to make in the next rounds. One of the teams did not fulfil their promise and managed to win the game. It nearly caused a riot in the classroom. Most of the other participants got so furious, they did not even listen to the argument that no honesty had been included in the set of rules. While playing the game, they all expected everybody stick to their decisions, the way we stick to our decisions while playing chess.

But that is one of the differences between games and the real life. In the real life we do not always keep our promises and encounter dramatic changes in a course of action. People have to be prepared to such surprises.

One may think the classroom games have a real advantage in this matter. Other participants may cause a lot of surprise, bring emotions into the game. Especially when the game involves conflict and cooperation dilemmas between teams. A person who is in charge of the game can also input some additional features and adjust conditions to the circumstances of a certain game. Provided this person is familiar enough with the model of the game.

I am a co-author of a class game, where teams are playing businesses competing for several “years” on the same market. They have to invest, procure materials, employ people, produce

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<sup>1</sup> the purpose of the game was in fact to disarm less than other participants

and sell various groups of products on various market sectors, based on the information they can purchase and their own knowledge and intuition. They also interact with one another, deal with banks, tax office and other government bodies etc. The whole model is based on supply-demand equilibrium prices and the law of diminishing marginal utility.

As a co-author, I feel confident enough not only to run the game, but also introduce some additional surprises, sometimes invented ad-hoc. But it was not like this a few first times the game was being played. I was not able to remember all the rules precisely and a number of times situation almost got out of control. I was surprised the participants did not notice my problems and seemed to enjoy the game anyway, even if we did not manage to finish all the operations on a timely manner.

When I got more accustomed to running the game, it became more like routine. I learned to notice some patterns of action. For example - players' behaviour usually reflected actual economic conditions. In times of a market boom - they would tend to over-invest and over-employ, as well as over-produce, no matter what the market conditions in our game. During recession participants were reluctant to invest at all and made the most conservative decisions possible, even if market in our game was blooming.

Soon I started to introduce minor adjustments, in order to encourage behaviour desired from the point of the game. Government interventions, tax exemptions etc. Just like a government driven by ideas of Keynes, I would try to make the game run more smoothly, so it could get more "educational", with the economic principles better observable to the students. I should have let the things go their own way, still I could not resist the temptation of playing God.

I sometimes wonder, if the games I run many years ago were not the most exciting ones (they were for me anyway). At that time not only students had to struggle with too much or not sufficient information, unable to take all the factors into consideration and make their decisions timely. The same would apply to a person in charge!

When considering educational impact, I guess the games I led afterwards were much better. Then I used to handle the model well enough, but had not enough courage to intervene yet. As I got much more experienced, capable of anticipating how the various teams were about to play, I put too much stress to smooth running of the game. The game became more entertaining, more elegant, but less educational, I am afraid.

The class simulations and games could be much more like real life, should a person in charge restrain from interventions, small suggestions and advises. But the person is only a human, and is eager to make the game more entertaining and easy to play. Is willing to maintain good relationship with the students and have them appreciate the game as much as possible. It can become a catch. The teacher forgets the educational objectives and concentrates on a pure fun.

### Business training

Regardless of the methods, the learning activities must meet learning objectives. Teachers want their students to learn. Teachers' goal is not only to make students preserve some information. They want their students to use the knowledge in typical and unusual circumstances. Students cannot practice business the way their ancestors did. They must be capable of creating their own ways and ideas. Therefore, they need to experience, in order to become productive, creative, and divergent thinking<sup>2</sup>. They have to process experiences and derive meaning from them.

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<sup>2</sup> as opposed to convergent thinking

In other words: in absence of reliable algorithms students have to develop some heuristics of their own. Thou they do not guarantee finding solutions in every situation, they are flexible. (Kozielecki, J., 1992, 119-146).

One cannot attain such skills by simply memorising. And that is what many students identify with learning. A boring activity of stuffing their brains with meaningless chunks of information. Yet learning is purposeful and goal-oriented. It leads to a change of behaviour. It's our everyday activity.

Are we prepared to make today's MTV generation learn?

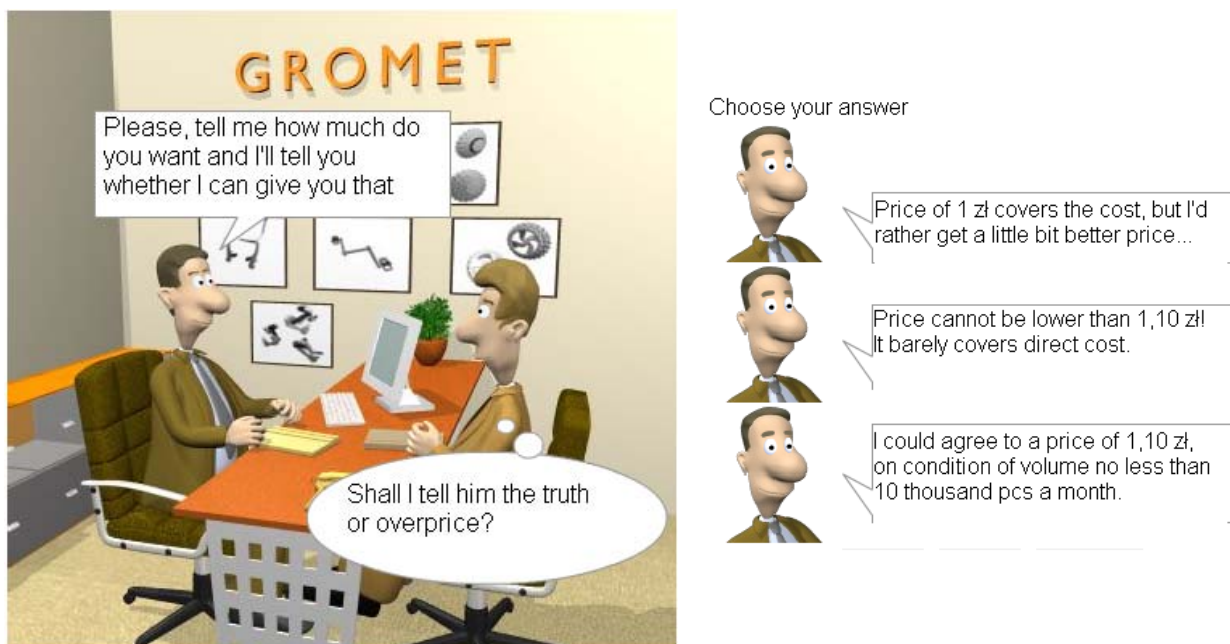
*You grieve you learn  
You choke you learn  
You laugh you learn  
You choose you learn  
You pray you learn  
You ask you learn  
You live you learn  
Alanis Morissette, "You Learn"*

## E-learning

Nowadays generation of students are reluctant to just learn. They require some entertainment during learning. Every trainer is aware that if he/she fails to entertain people during training, he/she has lost them. "It is already apparent that contemporary students have limited attention spans, have a more visual learning style than their predecessors, and need to be entertained in the classroom (Affisco, 1994, p.171)."

Put them in a 3-dimensional environment, interacting with characters on the computer screen, and you may have the best method to teach them.

Before I get to the e-learning games let me say a few word about e-learning itself. E-learning means teaching and learning with use of Internet technologies, mainly through www browser. Synchronous learning is the real-time education with a live instructor. It requires every student to log at the same time. It is similar to videoconferences, and may also utilize other tools, such as whiteboard. Provided there is a sufficient infrastructure, the synchronous learning should not be much different to a classroom training. The situation is not so perfect, and therefore most of the exciting stuff we achieve is through asynchronous learning<sup>3</sup>. It is a self-paced learning, usually Internet-based (may also be delivered through intranets or on CD's). The base of such learning are e-learning materials: courses, games and auxiliary materials. In order to make the learning efficient, they have to contain all the required knowledge, but also give opportunities to interact, exercise. They have to be attractive enough to focus attention for some time (usually no longer than half an hour at a one go). Games, exercises, quizzes, manipulating on the screen, create more interest, which results in better retention of knowledge.



Drawing 1 Negotiation games

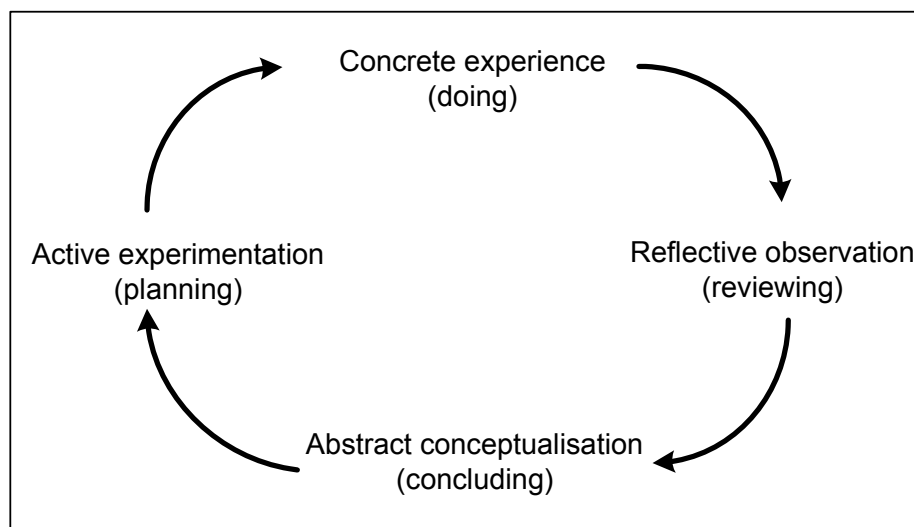
<sup>3</sup> It may also include periodic interactions with real people (tutors, other learners) - using Internet forums or chat.

## E-learning games

E-learning can suffer from the same problems any other education does. Slow pace, boredom, monotony, few opportunities to interact, lack of feedback. If you overcome such obstacles, the advantage of e-learning is this: one can create a very attractive environment and focus the attention of students on the screen.

With asynchronous e-learning there is always a question of interactions. In a classroom one cannot avoid interaction, even if one wanted<sup>4</sup>. During a classroom lecture there is always a chance some inquisitive students find the truths delivered by a professor dubious and challenge them. In asynchronous e-learning interactions, feedback and exercises need to be predetermined and carefully designed to get attention. If instructional designer wants the course to respond to students various needs and doubts, to allow them to find some unpredictability, he/she needs to prepare multi-path scenarios. Hence the games.

Let me remind you one of the models used to explain the way people achieve knowledge and skills, the Kolb cycle.



Drawing 2 Kolb cycle

Thanks to games we enable students to close the learning cycle by experimenting what they have learned theoretically.

During one of the classroom games I made an interesting observation. One of the teams managed to get advantage by using their own notebook and trying to build their own simple model of the game in an Excel worksheet. Compared to other teams, they had a better understanding of the market and all the interconnections.

Having a game model with complete set of rules on a computer makes handling a game much easier. Participants are able to concentrate on their own and competitors' decisions and their results, instead of spending hours on filling and shuffling paper forms, calculating exact numbers with paper and pencil, quarrelling with each other. The game can commence almost immediately and the appropriate rules can be found quickly.

“Using a computer in a game eliminates lengthy computations and board updating, and it allows a game with very complex rules to be started quickly and played by people who do not

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<sup>4</sup> there will always be a student who dares ask questions

have to know the intricacies of the rules. They may have to learn the application of the rules to play the game well, but nobody actually has to know the administration of the rules (Campion, 1995 p.175)."

Considering e-learning games one may think of "Doom" or similar games. Actually, educational games are seldom this elaborate. Educational computer games usually are a set of tasks, some of them quite adventurous, where students learn by making decisions and finding out outcomes of their decisions in a given environment. To make it more attractive, a lot of multimedia have to be produced. Photos, graphics, 3-dimensional models, sounds, video clips etc. Unfortunately, production of such courses can be really costly.

Instead of making a very elaborate model of virtual reality, one can base a game on a well designed, yet limited surroundings and build the tension around some cyclical decisions, such as managing the football team during Euro 2008 eliminations. Since many of us have been watching the eliminations, let me assure you a game based on managing a football team can not only make you feel like a famous coach (such as Leo Beenhakker in Poland), but also enhance the ability to manage any group of people based on the idea of human capital.



Drawing 3 Football manager, NBPortal.pl

When we worked to prepare the game "Football manager" we were uncertain whether it could be an exciting game. However, it turned out to be really involving, even without the exact simulations of the football match. Participant's attention is focused on buying valuable players and selling the worse ones, changing the team set-up according to the football players abilities and skills. The additional factor of uncertainty is provided by a set of shocks, randomly picked by the programme.

Using such shocks in various games one can easily create unstable environment, while maintaining consistence of the game model (they can be for example natural disasters or new technological inventions influencing market conditions etc.).



Computer games, even the very realistically crafted, are always some kind of illusion. Playing computer games the participants are never embarrassed, the way they sometimes are during class games. They accept this kind of convention and the fact of being a part of illusion without so much resistance.

With the real life games there is always a problem that some students may not readily take to this way of learning. Charles Petranek of University of Southern Indiana found that "an adverse side of simulations was that not all students relished this exciting method of discovery. Some students preferred a lecture. They wanted to take notes and to study for a multiple-choice test. I found it difficult to fathom someone not liking simulations or games, but it was true" (Petranek, 1994 p.515).

On the other hand, during classroom games participant easily get emotional, sometimes fight with each other. Their decisions are usually agreed upon within a team, so they learn to work as a team, communicate and influence the others. However, this level of emotions and concentration on interactions between the team members may diminish the focus on the educational objectives, such as learning how to make a rational decision based on financial situation, market conditions etc. Instead of analysing their results, members of a group may tend to put the blame on each other.

Computer games are free of such a huge emotional burden, thou they may be exciting as well.

Limited class time can also become a problem. To play a complex game a group may need at least a couple of days or several consecutive sessions. Another problem is a lack of time to discuss the game and its outcomes thoroughly.

Classroom games and computer games can be a very efficient educational tool, provided they have been properly designed to realise precise educational objectives. They allow students to experience managerial problems and make decisions, without actually risking money or other resources. My experience is, the computer games allow the students to understand the model and relations between certain phenomena better, than in case of a class games. The class games are better to learn team work and interpersonal relations.

## Literature

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