Improving Management Development Programs with Serious Games: Case of Capgemini, The Gaining Leadership Program

by Albert-Jan Pomper (COO, Ranj Serious Games Rotterdam), Bruno Jordaan (Head of Game Design, Ranj Serious Games Rotterdam), Johan Ravesloot (Learning & Development Officer NL, Capgemini) and Herbert Frick (CEO, Apunto sc Hamburg)

Serious Games, Management development program, Constructivism, Learning by Doing, Learning environment   **Key words**

The goal of this article is to show what the added value of serious gaming is in management development programs. The article starts with explaining what a serious game is and why and how people learn from games. Subsequently, the article discusses the *»Gaining Leadership«* program of Capgemini. In this program serious gaming elements are blended with more traditional training methods. The case shows the benefits of serious gaming and how a successful implementation can be guaranteed.   **Overview**

1   Introduction

Serious gaming is starting to become a known phenomenon among HR managers. IBM/Apply group research predicts that by 2012 20 % of the Fortune 500 has implemented serious gaming for professional learning. Last years ECLF survey showed that 60 % of European CLO's, among which a large portion of German companies, intend to test serious gaming in the coming three years.

Serious gaming is an important innovation for corporate learning and employee assessment. However, many HR managers do not yet fully understand what the true benefits of serious gaming are and in which way serious games can be successfully implemented in their organisations.

2   What is a Serious Game?

A very simple and rather straightforward definition of the term serious games is »games that do not have entertainment, enjoyment, or fun as their primary purpose« (Michael/Chen 2006, p. 21). Mike Zyda (2005, p. 26) adds to this » [a serious game is] a mental contest, played with a computer in accordance with specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives«.

Reaching a didactic goal When combining the aspect of the »mental contest« with the non-entertaining purpose of a serious game one can conclude that the heart of a serious game consist of a mental contest that trains certain cognitive skills of a player needed in the world outside the game. Serious game developers speak in terms of »game rules« that train specific cognitive skills in order to reach a specific »didactic goal«. Mastering the rule set of a serious game demands the exact same cognitive skills from the player/trainee as would be needed in order to master the real life challenges of the (serious) topic the game is about.

A distinction needs to be made between serious games and (management) simulations. The latter is a representation of a real life phenomenon that is as realistic as possible. In a simulation realism is everything. For example, fire fighters are trained using simulations of crisis situations. In this case it is of critical importance that the depiction of the situation, area of operation and crisis circumstances are an exact match to what a fire fighter would experience during a real crisis. Serious games, on the contrary, do not need to be fully realistic. Games intentionally use exaggeration, metaphors, appealing video images, 3 D graphics, audio etc. to attract the attention of the player and to emphasize specific messages.

3   Development of Serious Gaming

Neither the term nor the phenomenon »serious games« is new. One of the first times that the term was used, was as the title of a book by Clark Abt in 1970, well before the introduction of computers into mainstream entertainment.

Strategic thinking Historically abstract games such as chess have been used to improve strategic thinking. In more recent history, game principles have been used for serious

purposes in a variety of fields and industries. Examples of this include military training and combat simulations, surgery simulations, pilot training, crisis management training and management simulations.

Until recent years the relatively high development costs have held back the widespread use of serious games for non-governmental use. However, developments since the eighties have propelled the game development industry to great heights with the game industry overtaking the film industry in revenue. Continual development in game technology have increased the possibilities and effectiveness of games. Online distribution has made it possible to deliver games around the world quickly and efficiently, even in the office. In addition to this, the game development industry has matured and work process innovations have brought the development costs of games down. However, 50.000 to 500.000 Euro budgets are still needed for the development of a serious game.

In light of these developments the application of games for management developments purposes can be re-evaluated. The increased effectiveness and lower costs have made it feasibly to develop games for specific professional demands. Thus, the application of game principles for serious purposes is no longer exclusive to the military and other public institutes but also accessible for corporations.

4   Why and how do People Learn from Games?

This section describes the way people learn from games. This is done by examining several important educational or didactic principles and explaining how these principles work in serious games.

Social Constructivism

Social constructivism for a large part forms the basis of modern education (see for example: Hmelo-Silver/Duncan/Chinn 2006). The theory assumes that learning is mainly the effect of the effort of the individual to construct his own knowledge. A person learns by interpreting and restructuring new information and combining it with its existing views and mental models on reality. Constructivism puts emphasis on the interaction of the individuals with their surroundings. The world around the individual provides him with objects and occurrences that provide new information to refine his existing views and models. Generally, the strong link between social constructivism and serious games is asserted by serious games professionals. »For some constructionist thinkers, video games are the lost paradise« (Egenfeldt-Nielsen 2006, p. 198).

Constructing knowledge

Learning by Doing

»For the things we have to learn before we can do them, we learn by doing them« (Aristotle 1999, p. 21). Or as early days serious game scientist Clark Abt alternatively puts it (Michael/Chen 2006, pp. 25–26): »Games give ›dramatic representations‹ of the subject or problem being studied, and [games] allow the players to ›assume realistic roles, face problems, formulate strategies, make decisions, and get fast feedback on the consequences of their actions‹ – all without the cost of real world consequences or errors«. In other words,

Experimental learning

serious games provide a safe environment to experiment with things that are too hard, risky, or costly to experiment within real life. This relates to the field of experiential learning. According to experiential learning theory people learn from reflection on concrete experiences (Kolb 1984, p. 33). Serious games can provide trainees with a believable and relevant context to gain and evaluate concrete experiences.

Procedural Rhetoric and the Inside-Out Perspective

Controlling a process

The persuasive power of games has been explained extensively by Bogost (2007, pp. 28–29). According to Bogost, games are form of »procedural rhetoric« – the rhetorical power of the individual experiencing being part of a process. A serious game gives the player the ability to control a (complex) process. By reviewing the effects of his actions on the outcome of the process the player learns about the structure of that process. Trainees in MD-programs often have to manage complex processes as part of their daily work, and the notion of procedural rhetoric can be of added value to such programs.

Motivation and Fun

Feeling of capability

Gaming is evidently associated with fun and fun is associated with motivation. Michael/Chen explain the relevance of fun in serious gaming. Fun is a result of the positive feedback somebody gets from a game. Deen/Schouten (2009) show that resistance of students to learn a new language can be decreased with a language training-game. In order to reach this effect, the game needs to stimulate students' feeling of capability with respect to the studied topic. Furthermore, the game must show trainees that they make progress with respect to the subject. It is reasonable to assume that comparable effects apply in the context of MD-programs.

Immersion, Game Flow and Adaptability

Attention to the game

A final essential element in understanding the educational power of game is the concept of »immersion«. A good game is designed in such a way that it fascinates the player so much that his attention is fully focused on the game. A fully immersed player is not distracted by outside impulses anymore. In other words, a serious game stimulates that the attention and actions of the players/trainees remain focused on the didactic goals of the game. Game design theory refers to the »Flow Theory« of psychologist Mihály Csíkszentmihályi (2002) when describing player immersion. Csíkszentmihályi describes flow as the ultimate state of immersion. According to this theory a player will stay immersed (in the »Flow channel«) when he constantly experiences the right balance between the challenges of the game and his own skills (Juul 2009). For this reason it is important that a serious game continuously adapts to the players' skill level and keeps on providing the player with new challenges.

The educational and didactic principles described above form the basis for the design of any serious game, regardless of the subject matter. Together, these principles ensure that players are motivated, focussed and learn more about themselves and the world around them. They can apply the knowledge and skills gained from the game in their daily lives.

5   In practice: What do Serious Games Bring You that other Methods do not

This section introduces an actual case, the Capgemini Gaining Leadership program, in which serious game principles have been applied in a management development context. This makes it possible to validate the theoretical learning effects as described above in practice.

The Capgemini Gaining Leadership Program and the Slowessa Pipeline Project

Capgemini is one of the globally leading system integration companies. As a highly professional service provider for the top companies in the global arena, Capgemini has by nature a strong focus on technology, business and innovation. The company employs 95.000 people in 30 countries.

International leadership development is a key point in the company's HR strategies. Capgemini leaders need to be inspiring and highly competitive at the same time. Moreover, Capgemini leaders always work in an international context and in remote teams thus need excellent skills with respect to intercultural communication and remote (long distance) teamwork.

Educational background of the Gaining Leadership Program

The Gaining Leadership program is an international management development program designed for the future leaders of Capgemini. Behind the program lies a profound ambition to develop a training form that truly gives trainees lasting lessons for their professional life. Because of this the program needs to realise sustainable and meaningful changes in trainees views on their personal behaviour and their role in the daily working practice. In general the Gaining Leadership trainees are highly qualified and experienced professionals. They all have undergone extensive training programs, some of them even suffer from »training fatigue«. They believe that they hardly learn anything new in training programs.

Management development program

In an early stage Capgemini identified the strong capacities of serious gaming to realise the high ambitions for its leadership development programs. For the Gaining Leadership program a form is chosen in which serious gaming and traditional training formats are fully interwoven. Besides gaming elements, trainees follow several e-learning modules, classroom workshops, assignments and have to study a body of knowledge. The course consists of a pre-learning period (three weeks) followed by the training on location (one week).

Pre-learning periods + training on location

The main objective of the program is to train trainees, as future leaders, to act and think independently. The motto of the program is »Why should anybody be led by you«. As a result the program focuses on the personal leadership and interpersonal communication skills of participants. Competencies that are trained fall into five domains:

- Authenticity & Core Values
- Communication & Feedback
- Team Building & Team Dynamics
- Providing Direction & Delegation
- Decision Making

Case and Game Background

The real world as a stage

The serious game aspect of the course consists of an interactive narrative (the Slowessa Pipeline case) that uses the real world as a stage, involving a wide variety of media channels (web-based, video, telephone, text messages and so on), in which progression through the game is determined by the trainees themselves. In the game players »work« in teams for a fictional Capgemini-like company on the acquisition of a highly innovative and complex project, which is high on media attention. The project consist of the development of a new gas pipeline to be constructed from Slovakia to the Ukrainian Black Sea coast. In the game the trainees interact directly with the non-player characters of the game. These non-player characters are actively controlled by human moderators (called puppet masters). During the actual training week the game continues 24 hours a day.

Additional characteristics of the format:

- Trainees are divided in 4 teams, with approximately 10 players per team.
- Teams make progress through the game by completing milestone missions. Each trainee has to lead at least one of these missions.
- During the pre-learning phase, each trainee receives a dossier with essential documents, contacts and a set of personal business cards. These materials are needed to successfully complete missions.
- The game/course takes place on several locations around the world simultaneously: France, India, USA, UK, Scandinavia etc. Trainees in different locations work together remotely.
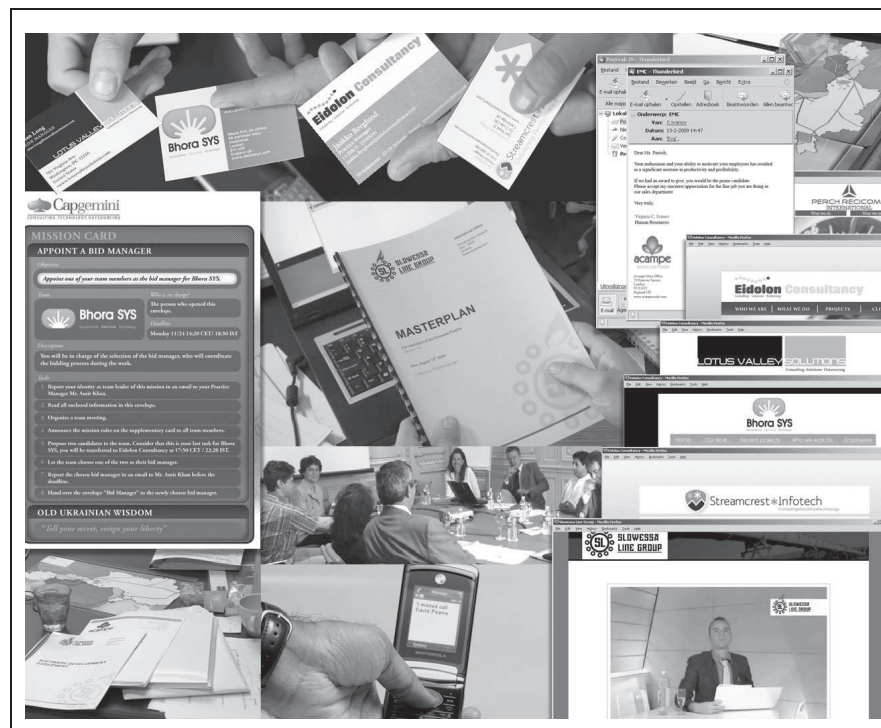

Fig. 1: Impression of game material (Source: Ranj Serious Games)

The New Levels of Development, the Inside-Out Perspective and the Power of Immersion

The gaming elements of the program are designed in such a way that trainees experience the context created as highly lifelike and as relevant as possible. The storylines, missions, fictional characters, problems encountered and game materials are all just like in real life. Moreover, the line between fact and fiction is deliberately blurred in the game. A very powerful instrument in this respect is the use of a great variety of multimedia channels. For example, on real websites a lot of background information can be found on the (fictional) Slowessa project. Furthermore, players receive real text-messages and voicemails on their personal mobile phone. Real (and open to the public) websites on the internet publish news items about the teams' actions. Catering personnel of the hotel where trainees stay deliver important messages during dinnertime.

Variety of multimedia channels

Soon after the start of the game players experience suspension of disbelief. The trainees are no longer sure what is real and what was not and, as a result, trainees start to treat everything as *possibly* real. At this point they are truly immersed in the game world, which has become reality to them. Ultimately this results in that trainees start to act and behave just like they do in their daily working practice and they stop trying to show »socially desired behaviour«.

Immersion

In this highly real game world trainers and puppet masters can confront trainees with problems that remind them of daily working life. Trainers and puppet masters (game moderators) have the tools to adapt the cause of the game on the fly to the individual needs of trainees. The level of pressure and stress on the teams can instantly be increased or decreased. Within the challenging but safe game environment trainees are stimulated to freely experiment with their behaviour and to leave their natural comfort zones. This leads to a new level of development. Trainees start to internalise completely new and unknown concepts instead of exploring the concepts they are already used to.

Challenging but safe

In addition, the players have to solve the problems that they encounter from the inside-out-perspective. Due to their active involvement in the game, the trainees are no longer looking at a problem from a distance, but are made part of the problem. Often they themselves *are* the problem. As players behave just as they would do in their day to day life, the incidents that occur in the game give trainers a perfect base to provide individual trainees with meaningful feedback. This makes the trainees aware of their own role and presence in the occurrence of problems and how that is perceived by their surroundings. It provides them with the necessary insights to be able to deal with these problems in real life.

Being part of the problem

The introduction of new levels of development is exemplified by the following occurrence. A trainee thought that he had always thoroughly understood all the lessons he received during trainings. He said he had never learned something new in a training for a long time. However, during the Gaining Leadership program he had to lead a team that, from the start, did not have much confidence in winning the game, due to the seemingly much stronger competition. Despite all his efforts, he was unable to motivate his team and ended up completely empty-handed. On the contrary, his zealous fanaticism actually increased the gap between him and his team members, demotivat-

Persuasiveness of the lesson

ing them even further. He later reflected that in former training programs he had attended, he had never really understood why his actions seemed to bring about the opposite of what he was trying to achieve. He was blind to how his own role in team processes had this negative effect on the motivation of those around him. Becoming part of the problem itself enabled him to gain insight in the significance of the competencies *providing direction*, *delegation* and how to deploy these competencies in the right way. His reaction to this clearly stated relevance of the procedural rhetoric and the inside-out perspective: »This turned out to be a life changing event for me. I finally found out what people kept telling me for years«. This example shows how important game immersion and the inside-out perspective is for the persuasiveness of the lesson.

Learning by doing and safe experimentation

A problem in traditional training form is that trainees often have great difficulties to translate the abstract concepts that are taught in a classroom setting to personally meaningful learning experiences. Also for Capgemini a frequently heard comment is »great training, all sounds nice, but this is not the way it works in my job«.

Context The game context of Gaining Leadership matches one-to-one the theoretical background that is trained in the more traditional components of the course. The context on the one hand provides the trainers with concrete and clear incidents to use in the training. On the other hand the context magnified the impact of these lessons on the trainees because they actually experience incidents themselves.

Being oneself on the mission The following occurrence exemplifies this. One of the missions is designed around being able to deal with pressure in crisis situations. A trainee leading this mission was put under tremendous pressure from various characters (controlled by the puppet masters) to follow a certain course of action. Even though the characters are fictional, the trainee in question experienced the pressure as being fully realistic. During the game, one of the trainees leading this particular mission nearly succumbed to the pressure, balancing between outrage and fear. This trainee was no longer acting out a role, but was being himself.

Meaningful and valuable lesson This occurrence enabled the trainers on location to deliver a meaningful and valuable lesson to the trainee in question. Instead of having to employ highly abstract scenarios describing the topic, the trainers were able to draw upon a very real and recent incident to deliver the lesson (e. g. a first-hand experience). Due to the context of the game, the trainee truly felt his own uncertainty. It therefore enabled the trainee to reflect first-hand on his own actions (and inactions), instead of passively consuming second-hand knowledge *on* the topic. The game makes it easy for the trainee to translate learning content to its own situation and challenges trainees to experiment. This makes the combination of gaming and more »traditional« training formats very powerful.

Social Interaction and Teamwork Stimulate the Learning Processes of the Individual

The game puts a lot of emphasis on (remote) teamwork. The players work in teams and have to communicate and collaborate to make decisions. If a team does not collaborate effectively, the game ensures that the team will experience failure during their assignments. The necessity for effective communication and collaboration is magnified because the team members are distributed over two locations/time zones. Individual team members get access to different information sources, and sharing this information is essential for success.

Furthermore the game is a stimulus for joint (constructiveness) learning. Teams are offered a lot of freedom in the possible solutions they construct in the assignments. Often, the solutions teams come up with contain elements that are not present in the content of the game, but are valuable additions nonetheless. The level of detail and imagination of some of the submissions for this mission are noteworthy. Not only do teams go to great lengths to make their submissions as complete and consistent as possible, sometimes they came up with issues that were not foreseen by the designers of the game.

Constructiveness

For instance in one case a team added a section on the responsibilities of the Slowessa Line Group to their proposal, although this was never an explicit requirement. The members of the team had, cooperatively but without outside interference, deemed it necessary not only to outline their own responsibilities but also to formalize the responsibilities of the customer, just as they would need to do in their daily working practice.

High Scores on Motivation and Fun

Within Capgemini it is always hard for trainees to set their daily working practice aside for the purpose of personal development. The gaming aspects of Gaining Leadership truly contribute to the motivation of trainees to put serious effort in their learning process. This fact is proven by the course evaluations showing significantly better results on student motivation compared to other Capgemini courses.

Feedback on teams' absolute progress and performance prove to be a strong motivator. Teams are really pushing to completing these missions. Sometimes puppet masters keep on receiving email from teams until the middle of the night. However, according to course trainers the effect of the relative progress, teams competing against each other, is even stronger: Teams would go to great lengths to outperform each other. A bright example of this was a team (the Streamcrest Infotech–team), which circulated a fake CNN-article about the hostile take-over of another team (the Lotus Valley Solutions-team), in order to disrupt their team dynamics. The members of the targeted team were so worried by this ploy, that they forgot to focus on their regular responsibilities. In the end the puppet masters had to create a new article to counteract the rumours and get the team back on track. The team-based competition provided an atmosphere in which teams and their individual trainees were motivated to perform their utmost best.
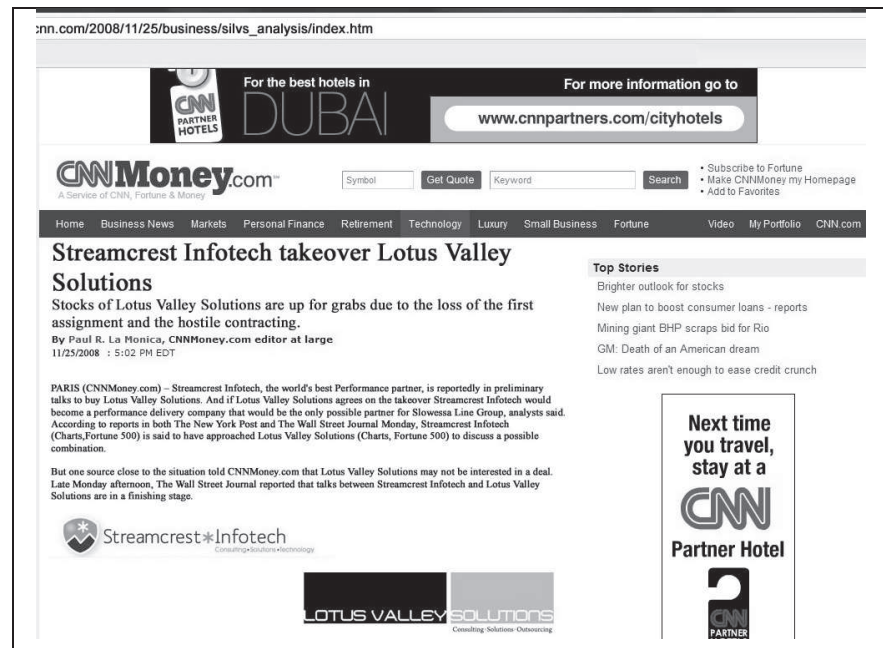
Motivation by Feedback

Fig. 2: Article Hostile Takeover Screamcrest Infotech (Source Ranj Serious Games)

One of the effects of this strong trainee motivation is seen in the use of the course materials. Not only do trainees thoroughly study the offered materials in advance, they also display a much better insight in the used materials during the course. Normally, pre-learning material is seldom read by the trainees, let alone applied constructively in the course of the training.

This paragraph concludes with the notion that the Gaining Leadership program is being perceived as a big success among various parts of Capgemini. It is an innovation of the management development that proves to be more effective in its goals to help trainees to rediscover their role and competencies, compared to traditional programs. Trainee evaluations show high grades with respect to efficiency, meaningfulness and motivation. Trainers feel that the individual experiences in the program give them the opportunity to deliver their lessons with greater focus and sustainability. Moreover, HR and business managers are keen on sending their employees to the program due to its results as well as the positive trainees' feedback. The program has been run several times in different countries and for a large part the runs in the near future have been booked. As a result the program is under constant development. The game content is constantly refined and additional content based on new insights have been added to the program. The program has been localized for new countries and different combinations of time zones.

6   Conclusions

Is your organisation, like Capgemini, looking for ways to innovate its management development programs? The success of the Gaining Leadership program shows that the integration of serious games in MD-programs is

something to consider. Gaining Leadership reaches its ambitious goal to create real changes in the way trainees approach their leadership roles. Trainees do not only increase their knowledge train specific leadership competencies. More importantly they fundamentally change the way they look at their role and look at themselves. Joining the program results in real changes in trainees' day to day behaviour.

As shown in this article, the integration of game principles in management development programs can have a clear payoff. Serious gaming provides trainees with a meaningful context, and in this way, help trainees to internalise theory. Serious games do not provide trainees with »readily consumable« knowledge. Instead they challenge trainees to solve problems from their personal perspective and help them to construct their own knowledge on the subject matter. This helps trainees to be better prepared for the challenges they face in their day to day working practise. Experiences in the context of the game can change trainees' views forever.

Furthermore games increase trainees' dedication to the MD-program. If gaming elements are properly designed and correctly blended with other elements of the program, trainees will be fully immersed and concentrated on their individual learning processes. The interaction between game and trainee is not the only source of added value. The interaction between trainees, as well as between trainees and trainers in the context of the game can also be of great significance. Interventions of trainers and puppet masters ensure that the challenges of the game are tailored to the needs of individual trainees.

In closing, serious games have proven to be a very strong medium when integrated in existing (global) corporate learning systems. They provide the perfect platform to train intercultural communication and management of remote teams.

If you want to see more examples of serious gaming and about the authors, please visit http://apunto-sc.com/serious-gaming/ (in German) or www.Ranj.com.

References

ABT, C. C. (1970) *Serious games*. Viking Press: New York

ARISTOTLE (1999) *Nicomachean ethics*. (W. D. Ross Trans.) Batoche Books: Kitchener (Original work published n. d.)

BANDURA, A. (1997) *Self-Efficacy in changing societies*. Cambridge University Press: Cambridge

BOGOST, I. (2007) *Persuasive games*. The MIT Press: Cambridge

CRAWFORD, C. (1984) *The art of computer game design*. McGraw-Hill-Osborne Media: Berkeley Retrieved

May 7, from http://www.vancouver.wsu.edu/fac/peabody/game-book/ACGD.pdf

CSIKSZENTMIHALYI, M. (2002) *Flow: the classic work on how to achieve happiness* (New edition ed.). Rider & Co: London

Deen, M., Schouten, B. A. M. (2009) *I am motivated because I can: a new approach to motivational game*

design, focused on competence and autonomy [DRAFT VERSION]

Egenfelft-Nielsen, S. (2006) Overview of research on the educational use of video games. *Digital Kompetanse, 1* (3), pp. 184–213

Hmelo-Silver, C. E., Duncan, R. G., Chinn, C. A., (2007) Scaffolding and achievement in problem-based and inquiry learning: a response to Kirschner, Sweller, and Clark (2006). *Educational Psychologist, 42*(2), 99–107 Retrieved on May 7, from http://www.cogtech.usc.edu/publications/hmelo_ep07.pdf

Juul, J. (2009) *Fear of failing? The many meanings of difficulty in video games* Retrieved on May 7, from

http://www.jesperjuul.net/text/fearoffailing/

Kolb, D. A. (1984), *The experiential learning: experience as the source of learning and development.*

Prentice-Hall: New Jersey, Retrieved on May 7, from http://www.learningfromexperience.com/images/uploads/process-of-experiential-learning.pdf

Michael, D., Chen, S. (2006) *Serious games: games that educate, train, and inform.* Thomson Course

Technology PTR: Boston

Pomper, A., Jordaan, B., Ravensloot, J. (2009) *The Added Value of Serious Games in Management Development*

Programs. 2009 PMI Global Congress Proceedings: Amsterdam

Zyda, M. (September 2005) From visual simulation to virtual reality to games. *Computer*, 38(9), 25–32