The basic learning approach behind Serious Games

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(The learning approach described here is based on the PhD titled "Beyond Edutainment: The Educational Potential of Computer Games" from 2005 - The PhD is not yet available to the public)

The starting point is that the current dominating edutainment titles only address a fraction of the potential market, namely *training*. In most current edutainment you will practice skills that you already have like spelling, reading, adding, subtracting, multiplying etc. With a few exceptions this is the bread and butter of the industry. However, playing educational computer games should not merely be about training but also learning. This requires a new approach to building educational computer games that involves the following elements:

- **Game universes over training**: The player immerses into the game universe and actual do, feel, and think the learning experience rather than merely train the skill, and the game actions overlaps closely with what you are supposed to learn. The computer game is an open-ended simulation that you can experience, explore, reflect, and try out solutions in.
- **Maintaining game qualities**: The motivation, relevance, interest, interaction, challenge, safety and rich universes so well-known from computer games are maintained.
- **Seamless play and learning**: The goals, action, and challenges in playing the game must overlap with the learning experience that is facilitated through the game experiences.

- **Subject and content**: Collaboration with the people who knows the subject area, real involvement of end-user and educational game researchers.
- **Game development**: High-quality game design and real game technology with established game industry.

The current focus on training is understandable as this is usually the easiest learning experiences to conceive but there is a large potential for creating different learning experience. When we immerse ourselves into *Civilization* or *SimCity* we are required to learn the elements in the universe to succeed. The universe is engaging, relevant and presented to me as a player. This is something I want to remember, and sees an immediate point in remembering – not some abstract idea that a teacher is insisting is relevant. This immediate agreeableness is the basis for all learning experiences, and computer games are capable of building the agreeableness – edutainment try to find the formula for less demanding players but not for the increasing number of people that are used to play computer games. Real gamers would never go near edutainment, and this group have long ago become larger than the target group for edutainment. This is probably the single most important reason why the US edutainment market went down from $534 mio. in 1999 to $235 mio. in 2002 – to lower the quality with more demanding consumers is not the way to go even with a lower price point. Still we know,

that computer games are more engaging, motivating and interesting
by virtue of their interaction, rich universes, challenges and safety

If we want to make educational computer games that can make it in the current market we need to extend from most modern learning theories while making computer games that are comparable to the current commercial titles – otherwise our titles will loose the game-part, and will be left with just the learning part. Looking at the existing edutainment titles we see that in general the playing part is used as a simple reward for learning rather than as an integrative part of what you learn. Most edutainment titles limit themselves to some extra sounds, pictures, rewards and simple gameplay with little relation to what you learn. These elements can often be recycled in many games, and for the youngest players this will be sufficient to keep them entranced. When training skills these will slowly transfer if you practice them enough times, and an audiovisual engaging interactive game environment is of course better than a piece of paper. Consequently, edutainment titles will work for training basis skills. However, the time spent on actually getting the extra rewards, aiming at the right numbers with a gun or steering clear of the right letters may build motivation but in itself it is not very educational – the time-on-task becomes very small. This is different when you integrate the learning and game experience. The new approach to building educational computer games extend from well-established qualities of computer games namely motivation, relevance, interest, interaction, challenge, safety and rich universes activated through a number of educational missions in the relevant game universe. This overall creates better learning experiences as we know

retention increases when using computer
games compared to other teaching

So when using computer games we actually remember what we learn beyond the next exam, because we are engaged, motivated and find it relevant to remember the experiences. Furthermore, the experiences are more richly presented through a number of modalities. The computer games provides us with rich concrete experiences that we can use to build strong abstract concepts through reflection preferable with peers, parents or teachers.

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