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“Keep your education out of my games and your games out of my education!”

On Differences in Motivation between Game Developers, Players and Educators

The reception of commercial video games often goes through a few different phases as they are discovered by those occupied with more serious matters and unacquainted with these ‘video games’.

First there is belittlement. These games are clearly intended for children. It says so in the name already - ‘Games’. Obviously they’re mere child’s play that is only also enjoyed by those few nerds that make them, who are more accustomed to technology than real life. Still, it is remarkable how far technology has come that we can waste such wonders on such trivialities, is it not?

Then, there is bewilderment. How dare these games handle topics clearly not intended to be consumed by children? Have they lost their minds? Even without ever having played one of those video games you can see what they are about at a glance, and obviously this should not be it!

Next comes a heroic attempt to right that wrong by supporting ‘serious games’. If games can cause harm to a child’s mind then maybe they can also be used to teach right instead of wrong. How hard can it be to make such playthings anyway?

Then comes the realization that making games that players actually enjoy and want to play by choice is indeed extremely hard and expensive, even if those games are not also supposed to convey some intentional message or concept.

Lastly comes the thought that since video games have become too big to ignore and are showing some signs of artistic expression at least, maybe they could be considered serious cultural artifacts after all. Maybe that new cultural mechanic of

video games could be employed as-is to teach values worth spreading. Provided, of course, there is some curation of the games used and guidance in the way they are played.

Anyone familiar with the stages of grief will recognize that we have now moved into the stage of acceptance - as we have done with other media before they entered, and often took over, the cultural mainstream. The purpose of this article is to help in whatever small way with this most exciting last stage of the process, by laying out what differences in motivation should be considered when trying to employ commercial video games in an educational context.

Differences in motivation between game developers, players and educators

As we will be trying to recognize and consolidate different motivations between the original intent of the game developers making commercial video games, the players that enjoy them (who might also be students), and educators looking to employ them in an educational context, it is worth looking at each of those motivations separately for a moment.

The goal of educators is to teach

Being a game designer and student, this is by far the topic I know the least about. So I'll just briefly lay down my own assumptions. These assumptions are that it is the educator's goal to teach some intentionally defined message or concept. Most often the success of this endeavor is then validated by some form of supposedly objective measurement in the form of a test. The extrinsic motivation of successfully passing that test then becomes the implicit real goal of students. This is especially true for those that are not intrinsically motivated to learn the defined message or concept in the first place. Consequently, approaches on how to reach the best effort-to-grade ratio differ wildly. At this point we might realize that we're not really discussing how to best learn something anymore. But I'm getting ahead of myself.

The goal of commercial game developers is to motivate players to play as long as possible

Now this might seem like somewhat of an euphemism. Obviously there is clear motivation for any commercial video game developer to make games that generate the most income possible for the resources invested. That is almost a definition of commerce in itself. However, it turns out that the most effective way to do that is to actually make games that motivate players to keep playing them for as long as possible.

That is because of two factors. First the reproduction cost per unit of a digital game tends towards zero. So all the production cost is fixed and essentially divided by the number of produced units. At the same time the average amount of hours that video games are played clearly correlates with their commercial success. In fact it correlates much stronger with their commercial success than their critical reception as summarized by their average review scores.[1] Once again time equals money but not in the way we would usually expect. This leads to a 'winner takes all' market in which the biggest and most successful games enjoy exponential commercial success.

But besides convincing players to spend as much time as possible with a game, there is admittedly also some motivation to give at least the appearance that a game is more than a mere Skinner Box by infusing it with various layers of meaning. This can be achieved through the game's theme, story, mechanics and aesthetics.

On one hand this might serve to maintain at least some perception of self-worth for the games' developers themselves, and to uphold their own motivation during development. Much more importantly though this also serves to lure players into the game by proposing the prospect of fulfilling a long-held or newly-discovered player fantasy through marketing.

Lastly there is the phenomenon of player's remorse which can somewhat negatively impact a game's reception and long term appeal as a brand. Player's remorse describes the realization that after having spend possibly hundreds of hours with a game there was actually not that much to it besides the lure of a Skinner Box. This can most vividly be observed in the various player reviews of games on platforms like Steam where often huge numbers of hours spent playing a game perplexingly

[1] http://www.gdcvault.com/play/1017784/The-Applied-Value-of-Player

correlate with very negative reviews of that game.[2] Therefore many games try to leave their players with a form of closure and catharsis when 'completing' them, instead of overstaying their welcome.

Unfortunately though this approach of artistic value has yet to establish itself as an effective motor to drive sales of games compared to their average hours played, and so hasn't become a general focus of attention of video game publishers. Therefore, as a main focus of games, it will probably remain reserved for heavily subsidised experiences designed to build up some larger brand for a big publisher or platform holder or for less commercial, artistic games made with smaller budgets that can justify a smaller commercial validity.

Either way it is worth noting that what appears to be a game's meaning on the surface is not necessarily what drives its production and development internally, which is an observation that we will come back to later.

How video games motivate

In order to keep players motivated to play there are a number of different techniques video game designers have discovered and perfected over the decades of the discipline's development. The following list of the most common and effective techniques is roughly summarized and taken from the GDC 2012 talk 'Attention not Immersion' by Richard Lemarchand[3] and the book *'Glued to Games: How Video Games Draw Us In and Hold Us Spellbound'* (2011) by Scott Rigby and Richard Ryan, specifically the Player Experience Need Satisfaction (PENS) model described in it. The colorful cover of the current edition might make the book seem a lot less serious than it is. But once the protective sheet is removed it reveals itself as a little black book of secret psychological recipes. I can wholeheartedly endorse its consumption. Just please use what you learn there for good.

<u>Attention: Directing it towards what's most important</u>

Attention is one of the most precious resources at a video game designer's disposal. Everything that is added to a game comes with a cost to the available attention of the player. Presenting the right amount of information and directing the player's attention

[2] http://store.steampowered.com/
[3] http://gdcvault.com/play/1015745/Attention-Not-Immersion-Making-Your

towards what is currently most important is in itself an art. Games therefore often use visual cues like movement, shape and color as well as audio feedback to constantly grab and redirect player attention to what is most important. Thereby they also heavily guide players in navigating the game state and the priorities of any necessary decision making process.

Competence: Optimal challenge

Games are carefully constructed in a way that the player always receives enough positive feedback to not lose interest in the game. At the same time games also make sure not to make it too easy for players. The goal is to keep players in a corridor of optimal challenge to keep their attention tightly focused on the game at all times. This is usually referred to as the flow state as named by Mihály Csíkszentmihályi in his book *'Flow: The Psychology of Optimal Experience'* (1990), while the corridor of optimal challenge is referred to as the flow corridor.

Relatedness: You matter

For many games this is a bit of a tough one. Why should you care about anything that happens within their virtual worlds? Therefore singleplayer games often come with some elaborate fantasy of what they represent. You're often supposed to save the world or secure victory for some group that you belong to, that cares about you and that is worth winning for. This is often combined with some form of persistent effect that players have on the game state. Over time they are able to leave an impact on the world and their actions lastingly shape it.
Multiplayer games have it a bit easier as other players quite naturally provide a social reference frame that gives meaning to the game with any minute spent on it by any player. Time is not only money but in this case also gives meaning to the shared activity.

Autonomy: You can do whatever you want.

Video games are usually most cherished by players when they give them a feeling of having freedom to act according to their own volition. Forcing players to do things they don't want to do is generally frowned upon. This also has given rise to the popularity of open world games in which players can freely roam large virtual worlds

and interact with many parts of it, even if the level of detail of those interactions is still relatively constrained.

Availability: The game is always there for you.

One thing that all video games share is that they're supposed to always be available. While real world activities are often constrained to a specific time and place, video games can be started and aborted whenever and often wherever the player wants.

The goal of players is to become and feel competent

Now many might argue that a player's goal is to be entertained. However that goal can actually be achieved much more effectively by other forms of usually more passively consumed media like literature, movies, theatre and the like. A defining difference between those forms of media and games is that within games players take on an active role. They are part of the interactive feedback loop between themselves and the game.[4] Without their actions the game cannot actually take place. Even in video games that do not directly assign a representation of the player within their systems players still usually take on a conceptual role and are often addressed as such by the game. The game therefore serves the purpose of fulfilling a certain player fantasy.

Unlike in real life the gratification is almost guaranteed as it is one of the main goals when designing a video game. Individual positive competence feedback is one of the most commonly used mechanics to achieve that goal regardless of the player's actual performance on a global scale.

This contrasts strongly with the usual setup in education in which it is the student's task to conform to requirements on a global scale. This often leads to frustration. The student falls out of the 'flow corridor' of optimal challenge, becomes frustrated and experiences negative competence feedback or lack of challenge often for extended periods of time. Combined with the extrinsic goal of passing tests this can lead to strategies where students only partake with minimal effort or opt out completely. While games also use negative feedback they usually only do so very briefly and

[4] Also see *'Game Feel: A Game Designer's Guide to Virtual Sensation'* (2009) by Steve Swink

make sure to place the player quickly right back in the corridor of optimal challenge. In video games even death only lasts a few seconds instead of an eternity.
While it is the goal of education to teach, games only care about motivating their players to play. Teaching them the game's mechanics and letting them overcome obstacles is only a means towards that end. Essentially, learning from commercial video games is an accidental byproduct. However, most players seem to prefer those games that are not obviously meant to teach them and avoid serious games meant to be educational, if given the choice.

How do games teach?

Games might not be the most time-effective way of teaching something, but mastery comes from continuous repetition. As Aristotle said: *'We are what we repeatedly do. Excellence is not an act, but a habit.'*
Video games successfully contrive to make us go through repeated loops for extended periods of time. Loops go all the way down to the most basic core of any video game within its programming. This core function is usually referred to as the main game loop. The main game loop is executed many times per second as a game is 'ticked'. Each iteration through the core game loop is used to generate a new game state and usually a visual frame that is then fed back to the player through the game's video output along audio and possibly other feedback channels. The game then processes the player's input and the loop begins again. Most video games go through this loop at least 30 times per second, but many hardcore players of especially action oriented video games feel that 60 frames per second (FPS) or more lead to a more acceptable game feel.
This concept of loops then builds up in the architecture of any game, up to very abstract and long-term concepts that can span many hours, days or months of singleplayer or multiplayer gameplay. Combined with the strong motivational forces of games to keep players engaged for those extended periods of time, this can make games very powerful teachers - simply because they have a lot of time, attention and repetitions to work with.

What do games teach?

But what do games actually teach? When first looking at games it is tempting to assume that they would teach things about the themes displayed in the game's aesthetics and narration. In other words what is visible on the game's surface. It is much more plausible however that games actually only teach the player skills actually required to play them, so-called gaming literacy[5]. These are usually skills required to perceive, navigate and manipulate the presented game state, so for example language, spatial thinking and an understanding of complex systems and their mechanics.

The disconnect between what a game portrays on its surface and in its meaning and what it actually conveys to players is a much discussed topic in video game theory. It is referred to as ludonarrative dissonance[6]. While it is elegant and a worthy design goal to align the narration and mechanics of a game as much as possible, it should not be taken for granted that a game will teach and mean to players what it displays on the surface or even what is intended. The game only happens once the player interacts with it; and players bring along their own meaning into the game.

Depending on how we look at it, this is still a somewhat unsolved problem or an opportunity at the very forefront of the state of the art of video game design and it seems like there is still much left to be discovered.

Challenges and opportunities

A goal of trying to incorporate games in a practical educational context in schools would probably face several challenges, but would also open up new opportunities.

Barriers of Entry

Commercial video games have several barriers of entry. First they require hardware to be run on which might not be present in schools. While some students could possibly bring in their own gaming machines this could also lead to discrimination based on personal background.

Besides this most games require a certain amount of gaming literacy as many concepts build up on top of each other from game to game. Finding an entry into

[5] See *'Gaming Literacy: Game Design as a Model for Literacy in the Twenty First Century'* by Eric Zimmermann in *'The Video Game Theory Reader 2'* (2009) Perron, Wolf, et al.

[6] Originally coined in *'Ludonarrative Dissonance in Bioshock'* (2007) by Clint Hocking http://clicknothing.typepad.com/click_nothing/2007/10/ludonarrative-d.html

hardcore gaming culture takes time and not everyone will be on the same experience level. This obviously includes the teachers themselves, who might find themselves outclassed by their hardcore gamer students. However this could also be seen as an opportunity for these students to shine and experience their own competence in gaming to be recognized as worthwhile, hopefully leading to heightened engagement in class.

Time

While a movie can easily be fitted within the time spent in school, most video games require much more time to be completed. They are in this much closer to books in potential scope. Some games simply require too much time to be ‘required playing’. It could be possible to prepare savegames and the like to allow players to quickly jump to certain key passages of a game. However, these would also require time and preparation. Another alternative would be to rely on videos depicting those key passages of the games. While observing a game is not the same as playing it, let’s plays and streamers are by now an integral part of gaming culture that many students are most likely familiar with in some form.
Again the amount of time spent with games could also be seen as an advantage if we see the time spent with the game as extending the time spent with the topic in a sensible manner.

Age Ratings and Content

Many games depict graphic content that is not suited for all ages. Especially for students or teachers unfamiliar with games some impressions might be shocking. Also, games allow for unforeseen player expression, offering potential to ‘troll’ and disturb lessons involving live games.

Focus and Attention

In advertising the "vampire effect" describes a phenomenon where some gimmick used in the advertisement diverts so much attention to itself that viewers afterwards only remember the gimmick but not the intended content of the advertisement. While originally meant to steer attention towards the content it winds up completely obscuring it in the viewer's mind. Something similar might happen if commercial

video games are used in a classroom setting, where the game might grab and then hold the player's attention beyond the intended scope.
On the other hand we should not underestimate the potential of games to reactivate and engage students that otherwise might have given up on a class or that lack motivation or interest in the topic at hand. Using commercial video games that are seen as "cool" by the students in an educational context probably offers one of the biggest opportunities.

How commercial video games could be used in education

I see several potential avenues in which games could be incorporated in class.

In concert with other related media

Many commercial video games are based on literature, which might also have been adapted in form of movies or theatre. Combining several media examples dealing with the same topic could lend itself well to activate and interest students of different backgrounds and sensibilities, while also allowing to see the topic from different perspectives.

As an example leading on to traditional treatment of a topic

Games excel in activating the player’s imagination. A topic that might otherwise seem dull and uninteresting could be made more accessible if presented by an opener in form of a well-known and popular video game dealing with the same topic.

As a concrete learning help

With most commercial video games the application as concrete learning tools for school topics seems somewhat limited. The most obvious example seems to be foreign languages. Most other skills conveyed by commercial video games are not usually part of a school’s curriculum, unless spatial navigation, physical manipulation, military tactics, teamwork, complex systems or vehicle driving are somehow also a part of it.
However, some sports might be applicable to convey team tactics. Movement games

could encourage exercise. Music games could be used in musical classes.[7] Many games or VR experiences depict historical, fictional or otherwise unreachable places in a level of detail that is unprecedented. The catalogue of games is continuously expanding, and so are the possible applications of games as a concrete learning tool.

Closing Words

'If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders. Instead, teach them to yearn for the vast and endless sea.'
Antoine de Saint-Exupery (attributed)

I hope this article has given some pointers in regards to what powerful motivators commercial video games can be. At the same time maybe games can also teach how to motivate students more effectively. Last but not least games are continuously evolving and if the right combination of game and subject can be found they could actually be used to help find an entry into school topics and potentially even serve as a concrete learning tool. It would be very exciting to see those powers of commercial video games used to instill a pursuit of knowledge beyond the fulfillment of a playful fantasy.

[7] Also see *'Music Video Games:Performance, Politics and Play'* (2016) by Michael Austin et al. especially *'Guitar Heroes in the Classroom'* by David Roesner, Anna Paisley, and Gianna Cassidy