

Portnow & Floyd's *tangential learning* concept for learning contents in videogames.

From Daniel Floyd's vid: <http://www.youtube.com/watch?v=rN0qRKjfx3s>

We cannot ignore the relevance that videogames have in nowadays society. And when it's related with teen or child audiences, that relevance will be even bigger. We can also say that videogames can be turned into an important element within the educational universe, and the possibilities that videogames have for education are being discovered.

The relationship between videogames and education is still being an important source for innovation and research. But before talking about this tangential learning concept which is mentioned in the title, it would be better to have a look at the current educative software scenery.

About videogames and educational videogames.

In an article written for the Meaningful Play conferences (conferences about videogames and its educational capabilities), James Portnow suggests that what we know as "educational videogames", tend to retract from the goal of entertainment, a goal which we can find in many videogames, to set the goal in "teaching something". But in exchange, this educational videogame may "trick" children, promising the fun that we could consider inherent for any game, just to insert the whole educational content, giving up on many elements designed to entertain.

This fact seems to polarize the videogame industry according to its goals, and grows the breach between videogames made to entertain and made to educate. Usually, the entertaining ones have a bigger success both among gamers and into the videogame market, while the educational ones use to have a smaller place for the same fields.

According to Portnow, videogames have an extraordinary educational potential, but the main goal of a videogame should not be changed to make a game educational rather than being fun, because above all, games should be fun. Portnow gives another perspective for channeling this potential in videogames. It's not about making a game focused on teaching things, it's about making the concepts or facts that we can learn, something parallel to the game, without taking away the main goal of being fun, nor the elements that would build the fun factor. The learning that we could take from a game like this is a kind of indirect learning, and is what Portnow calls tangential learning. We should take notice that this concept fits mostly for learning contents from videogames, and may not be easily applied for videogames that would try to build other capabilities (such as coordination or mental agility).

***Tangential learning*: From "make learn" to "enable learning".**

In any videogame that we could call educational, most of the elements and most part of the whole gameplay is focused on teaching you something. According to the tangential learning concept, this "something", these contents we would want to *teach*, should be set a bit more

separate from the gameplay, but not taking away the possibility to retrieve these contents whenever the gamer wants to reach them. The main part should be showing, within the gameplay, facts, data or a bit of knowledge that the player may not know, in a way that:

- The main goal of that videogame is still being set for entertaining.
- References for the contents that may be ingame, should not suppose a difficulty or drawback of any kind when playing the game
- The learning of those contents shown shall not be a demand within the game.
- The player may gain access to the whole content that the videogame may have for learning.

This way to introduce contents in a way that the player is not “asked” to learn them, makes the relationship between the gameplay and the contents a bit different. Instead of “make the player learn”, forcing the player to memorize or process these contents to continue “playing”, the game just “enables” the learning of the contents that the player may ask, without taking the fun away.

These kinds of perspectives were already used in some games, but in this case, we will recall an example of a recent game. We will be talking about Mass Effect. It’s an action role playing game (ARPG) that takes place in a science-fictional universe. This universe is full of details about different species, technologies, cultures and stories about all of them. Put it all-together, all of this data can make a big block of contents that, despite of being shown in a detailed way inside the “codex”, it’s not necessary to “learn” that content in order to actually play the game. Instead, it can be turned into an element that makes the “gameplay” even deeper and helps the player to define and understand many aspects shown in the game, which are referred to that content. In any case, the unawareness of the data featured in the “codex” may not be a critical obstacle when playing Mass Effect.

But this codex is still mainly made of fictional contents, which we may not find very useful when we want to move on towards the main objectives that are usually defined by the educational system. However, this “in-game index” way of including content, is just one of the ways for introducing contents inside a game, and making references to those contents when playing, without reducing the fun. The next step should be, making the in game contents actually suitable for seizing educational objectives. Surprisingly, such a thing has been made even before Mass Effect came out. Unfortunately, games that can achieve those goals are very frequently historical or strategy games, such as the next example: Age of Empires 2.

AoE2 is a medieval history based real time strategy game. In the main menu, we can find, among other options a “history” section, in which the player can find information referring not only to all of the civilizations that the player can play with, but also general information about the Middle Ages history and, in general terms, contents that we would find in a medieval history lesson. All of this content is separate from the gaming experience, but still attached to the game itself, and when playing, we can find some elements (objects, buildings, characters) that can refer to those contents, without actually having the need to learn them or to know them to play properly. Whenever the player wants information that is more related to the game itself, like what kind of buildings can be built, or the special units in each civilization, that

data is shown clearer in the civilization choosing menu, totally separated from the “history” section.

As we can see once again, it is possible to place contents within a game, and this time, being more related with some possible educational objectives. In this case, related with studying medieval history. And still, the fun factor hasn't been withdrawn from the game in order to make it educational.

This Tangential Learning concept in videogames may not be deployed without some extra difficulties for game developers. The main extra difficulties are referred to:

- Development costs: Setting up something like Mass Effect Codex is an extra effort for the programming companies. The more and better information it may contain, the bigger the development costs will be (and the more memory it will take). That may suppose an important fact when looking at videogames as a product aimed for economic success.
- Wider educational goals: There would be a need for finding proper methods in order to adapt bigger and wider-ranged amounts of contents, for a wider group of videogame genres, and not reducing it for historical content into strategic games. These new methods should be also aimed to improve the way the contents are referred inside the game, and make them more effective or more attractive for players, without forcing the player to gain access to the contents or learning them in order to play the game appropriately.
- Separating reference from fiction: There is also a need to make a difference inside the contents, between the elements that we could call educational, and the fictional data or knowledge in which the game may be also based on.

In Daniel Floyd's video, we can see some ideas that may be very useful to overcome these possible difficulties. Like reducing development costs and disk space, linking through internet, the references inside a game with content that is available in an internet database like Wikipedia.

As for the methods to make references inside the game, Portnow and Floyd suggest the use of dead spaces inside the game, like the loading screens, to show some of the content. It would be not only clearer than making some other method for highlighting contents inside the game, but also more subtle than showing them inside the playable part of the game.

But all of this should come with a stronger commitment from the game industry, as the games become more complex, and there is a need to take games one step further, and make them something more than just a pastime.

Anyway, this way of introducing contents inside a videogame as something more separate from the gaming experience, may suppose a change in previous conceptions of “educational gaming”, or “learning through videogames”

What kind of changes may suppose the tangential learning concept when talking about educational gaming?

We have to keep in mind that the tangential learning in videogames concept is aimed for videogames in which we can learn **contents**, and videogames intended to develop some other skills: mental agility, visual or motor skills, may not be included inside this concept.

But in a first glance, we can see there are some changes from earlier visions about learning through videogaming.

Tangential learning in videogames: a probabilistic aspect.

Unfortunately, it's a common mistake to think about videogames as an element of absolute effectiveness when used to "teach" something, when thinking in videogames as the ultimate way for transferring knowledge, and believing that, having a game aimed to teach certain contents, whoever plays that game, **will** learn those contents.

When thinking like this, what we are doing is giving the videogames, the whole challenging task of teaching in an efficient way anything it may contain. Thus applying pressure on the videogames, as we are waiting them to teach the player in a quicker, better and more pleasant way than any book or teacher could. Also adding the collateral effect of changing the main goal of the videogames, and turning them into some kind of "Trojan horse" of entertaining, with a full set of imminent learning contents inside.

But we have to forget the idea of a videogame as an educational panacea. Its possible use as an educational resource is noticeable; however, videogames' effectiveness as this kind of resource is still being, as well as other educational resources, probabilistic. This would mean that, having a game with some specific contents suitable for learning, whoever plays that game, *may* learn those contents.

Possible influence factors within videogames to promote tangential learning.

Though it's hard to precise the real possibilities that any player will have to move on from playing to learning, we may be more sure that these possibilities will grow or decrease depending, not only on the advantages that we would all give to videogames as a teaching tool, but also depending on some more elements included in the game itself, which will determine its effectiveness to introduce the contents that the player can learn. Some of these elements have been known and used for a long ago when making educational games and some others may not.

- The player as an active part of an environment: Other audiovisual learning media that we would think as usual in the educational world (like the cinema or the theater) have no such thing as the figure of a "player". The spectator would not take an active part in what is being shown. This is a prime advantage for videogames, because they imply the person playing, as an active part of what is happening inside of it, more than just a

passive spectator. Should the game elements be associated with possible educational contents, and having the player a bigger role, as an active part of the game, it may lead to an increased probability of acquiring knowledge from the game.

- The player motivation when playing: This was the major advantage that we associated to videogames when thinking about them as a teaching tool: Its potential to entertain. It was common to expect from an educational game, to “teach while entertaining”. Like said before, this conception about the educational games makes them look like educational Trojan horses. But we shouldn’t dismiss this advantage nevertheless. We must remember that a videogame entertains while it’s designed to entertain. It’s pretty difficult for the game developers to make a game as a good entertaining tool. Difficult enough to make us think twice about giving the games, a second aim (entertaining and teaching) and what’s more, expecting the game to accomplish these two objectives with an efficiency that we wouldn’t even expect from other educational resources. The advantage of this motivational effect in the player should be taken having the game as a leisure activity, with a possibility of turning itself into a learning activity, should the player wants it, and not as an undercover learning activity, knowing that a *fun* game is more inclined to transfer the contents inside of it to the player than a game that is not fun.
- Effectiveness in the references: We’ve said that the starting point of tangential learning is the potential of a game to show or make reference to unknown facts, data or information to the players and give them the opportunity to amplify that knowledge without basing the game itself on the acquirement of knowledge. The effectiveness to make this happen may also depend on the quality that the in game references may have relating to the contents that can be learnt. Going back to the Age of Empires 2 example, we may notice that the contents being shown (history, in this case) are firmly related with what is shown in the game itself (being AoE2 a real-time strategy game based on medieval war). The player may find more difficult to learn from the contents in a game, if these contents are not very related (or if they are poorly related) with the in game elements and with the gameplay experience. Improving the relationship between the game elements and the contents which we may find useful for education can suppose one of the big challenges for the future of the idea of videogames as educational resources.
- Quality in the contents shown: Once the player has decided to transcend from the gaming experience to the contents related, these should be introduced with enough quality to ensure a sufficient level of knowledge acquirement. About what would we consider a “sufficient level” when talking about this possible acquirement, we could base on the level of knowledge that should be expected from a student with an age that we could consider the main “target” of the game (to know what age would fit a game, the ESRB may be considered as a possible indicator, though not precise, because it would determine the minimal age recommended to play the game and not the main target, but it can give us an approach).

- Making the contents accessible: the player's decision of going beyond the game, and towards the contents of it, can sometimes collide with the accessibility that these contents may have inside the game. We can find ourselves trying to move on from the game to the contents of it, and finding that the game actually quits, minimizes or is just sent away, leaving us in front of the whole block of contents, apart from the game. This can make the player feel like being tricked, especially when finding themselves separated from the game, and can make them stay away from the contents. But we also know the difficulties and the additional costs that would suppose to include the contents within an in-game index. Floyd's idea, to link PC games contents to Wikipedia via an internet browser can help saving disk space inside a game and the effort for the developers to include all contents inside the game. Maybe in the future games can be accessible enough to allow the players making contact with the contents, without feeling separated from the game. And still having all the previous advantages.

Videogames as motivation for self-formation.

The kind of knowledge acquisition that we can achieve via tangential learning may not be strictly "educational", should we attend to the differences between *education* and *formation* as told by authors like Fritz März (1979), we will find that the role that videogames can have is not exactly educational, because it can be hard to define it as a "help from an educational agent to an individual in its educational process". Tangential learning, in these cases, can be observed as a help, but in terms of motivation (through references inside videogames) to draw the player into its own formation (through the learning of the contents which are referred). The videogames intention may also be considered in this part, because the aim of the videogame, like we said, is not "to educate", but to entertain, while enabling possible learning processes. But this is precisely what we should expect from a leisure activity such as playing videogames, rather than finding videogames being forced to be strictly "educational". This may not lead us to misunderstand the huge formative and motivational potential of videogames, to draw the player into the possible learning of contents.

But, in fact, it's hard to ask a videogame to "educate" (or to replace other educational or formative elements like books, or teachers), but this doesn't mean that the *educational agents*, (teachers, mostly) can't turn videogames into an important *educational factor*, according to their immense motivational and formative potential. The value that videogames have as didactic resources can't be denied, but it may not be overestimated. And inside this value that videogames have, tangential learning may constitute another way of understanding the learning of contents in videogames, as a parallel experience of gaming that may lead, not only to enrich the gaming experience, but also can benefit the player, giving him new information, without taking away the fun factor. When it comes to evaluate videogames as a possible educational resource, this has to be made considering them as a leisure activity, and not as a possible undercover lesson, and its possibilities to succeed as a formative element or as an educational factor, must be realistic, and must attend to its capabilities and limits towards the player, the student or the classroom.

The importance of a healthy gaming.

We should also remember that videogames need, as well as other leisure activities, moderation when used, in order to maximize their best features, and prevent the effects of possible excesses. We can find some advices about how to prevent possible negative effects of immoderation or inadequate gaming habits, such as epilepsy, mainly on the videogames instructions booklets. Some advices can also be found on the Internet as well. There are also authors like Martínez-Otero (2007-98) that highlight the role that parents and school can have when it comes to encourage students towards a responsible use of videogames. Mainly these advices are focused on:

- Controlling the gaming time, and let the eyes relax for approximately 15 minutes after each playing hour.
- Controlling the size of the screen, the distance from the player, the lighting conditions of the playing zone and the posture kept when playing.
- Assuring that the gaming time does not invade time used for other necessary activities
- Choosing videogames according to the player's age (ESRB can help us when choosing)
- Playing with friends or parents (if we're talking about children playing with videogames) is also recommended.

Conclusions

We have seen that Portnow and Floyd's concept for tangential learning in videogames can be a twist in what we know as "educational gaming". According to this new concept, the main goal of a videogame should not change from being fun, while being capable of obtaining other advantages from videogames to enable the learning of contents by a portion of the gaming audience. This can be made through references to the possible learning contents that can be included inside the game itself or at least, giving a chance of transcend from the game to the contents whenever the player wants it, thus making the videogame a motivating element of indubitable value that, combined with its formative capabilities and its most inherent features like the players immersion as an active part of the gaming experience, can turn the videogame, through the educational agents, into an outstanding educative resource. But we must remember not to overestimate its capabilities, nor expect videogames to replace other necessary educative resources.

This way of taking advantage of the videogames capabilities towards the education comes with other extra difficulties. Some of them, like the disk space can have a convincing solution, but others, like the way the contents are referred or the accessibility, can place more questions. These questions can bring, in the oncoming future, new ways of facing the videogames challenge of making themselves a place in the educational world, without losing their identity. An identity that is being more complex as time goes by, since videogames are looking for new ways of making the gaming experience, something more than just a pastime.

We cannot negate that education has a challenge towards videogames as well, the challenge of understanding videogames in a comprehensive way. And this tangential learning concept can make new paths in this quest for finding common places between both worlds: educational and videogaming.

Daniel Floyd and James Portnow's video *Brain training: Videogames and tangential learning* can be watched here: <http://www.youtube.com/watch?v=rN0qRKjfX3s>

James Portnow's article about tangential learning can be read in: <http://www.next-gen.biz/blogs/the-power-tangential-learning>

For more advices about healthy gaming:

<http://eu.ncsoft.com/es/healthy-gaming/>

[http://noedb.org/library/features/50 tips and tools for healthy gaming](http://noedb.org/library/features/50_tips_and_tools_for_healthy_gaming)

Bibliography.

Martínez-Otero, V. (2007) *La buena educación; reflexiones y propuestas de psicopedagogía humanista*, Barcelona, Anthropos.

März, F. (1979) *Introducción a la pedagogía*, Salamanca, Ediciones Sígueme.

Moreno Herrero, I. (2006) *Prácticas de tecnología educativa: propuestas para una metodología participativa*, Granada. Grupo Editorial Universitario.