

“Oops, I Learned Something”: Teaching Via Game Mechanics

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Abstract: This paper describes, with extensive examples, the process by which video game mechanics can be designed to further an educational message. To do so, we study the case of a video game that is being developed in tandem by a traditional video game studio and nonprofit organizations. Two factors condition the game design: the educational goals and the caveat that the target audience responds negatively to any heavy-handed attempts at education through games. We present a list of the different game systems that were designed to carry forward the messaging while retaining their fun factor—mainly Combat, Missions, Conditions, and Multiplayer. A mechanically solid game is built in which the messaging is embedded in metaphors and supported by the game’s story and mechanics, pushing forward the notion of Incidental Learning.

Introduction

In Fall 2011, Schell Games began work, in collaboration with the BEST Foundation and Drug Strategies, on a mobile video game which had the goal of introducing teens to situations in which they might be tempted to try substances such as alcohol, drugs, and tobacco and providing them with the right tools to recognize and navigate these situations. This paper begins with a description of the game’s educational goals and its unique constraints. This is followed by a look into the process of defining the game’s educational objectives and the choice of game mechanics to support them. Following this, an explanation of how the different game mechanics in the game work together to push the educational message forward is presented. We conclude with an overview of how each educational objective is addressed by the game’s design.

It is important to note that the game is currently in the final stages of development and not yet released. All names and features described are not final and may not represent with exactitude the final product.

Defining the game

The first step toward the game’s development addressed the definition of the platform and target audience. The game would be developed for the iPhone, iPad, and Android platforms, and would target players between 11 and 13 years of age. Early focus testing motivated the team to create an edgy setting for the game, in which the main characters would be sentient mice who live and coexist with humans in the world as we know it today. These mice confront beings known as the Controllers. The player’s role in the game is that of a human being who is asked to help lead a tribe of mice against the Controllers. As the game progresses, the player earns the trust of new recruits for their tribe.

Messaging caveat

In early focus testing, players had a strong negative reaction to the notion of the game referring literally to substances such as drugs and alcohol. This led the team to make the decision of not addressing these substances directly at any point in the game, but rather with metaphors. As a result, the game’s ability to meet its messaging goals relies heavily on its game mechanics and their ability to reinforce the different metaphors in the story.

Methodology

Instead of approaching the messaging explicitly, the game relies on metaphor, game mechanics that can carry a message, and other subtle indicators of the points that it aims to educate on. As such, the messaging must be explicit and clear enough such that the players get something out of it, but subtle enough that it doesn’t feel obviously like a game trying to teach them. Many of the situations and mechanics in the game are intended to provide the player with a metaphorical layer that they can overlay on their lives, providing a toolbox of sorts in their subconscious which they can call upon when they have to deal with temptation and standing up to pressure.

This methodology can be tied to the concept of Incidental Learning, which is to say the type of learning that is unplanned or even unintentional. The player should approach the game of their own

volition, drawn by its properties as a game. The learning should then follow naturally, as a result of the player experiencing the game.

Defining the game goals

The process of defining the goals for the game led to the realization that first and foremost, the game needed to be fun. In contrast with other educational projects in the space in which the educational factor seems dominant, this particular project would focus on creating an entertaining product that taught the players a valuable message, rather than an educational game that struggled to be fun.

As such, the main project goals were defined as follows:

- First and foremost, create a fun, engaging experience that audiences want to play.
- Introduce players to situations where they may feel pressured, and display methods of dealing with them.
- Introduce the internal / external pressures that can influence decision-making.
- Show that players don't need to give in to negative pressures to be cool.
- Engage the player without preaching or speaking down to them.
- Create a mechanism for showing positive peer support.
- Provide a skill recognition and actualization activity.
- Normative education: emphasize that the majority do not use substances, nor do they find it cool.

Willpower vs. Control

During the development of the game, several core concepts were proposed to bear the weight of the educational theming. Initially, the concept of “Will” was chosen to communicate the notion that teenagers ultimately have a choice when becoming involved in pressure situations. In the game, the Mice characters would have a measurable amount of Will, which would determine their strength and likelihood to give in to temptation.

The team quickly realized the problem with this approach, as we did not want the game’s message to communicate that being weak-willed leads to trying substances. Rather, the ability to choose comes from retaining control: control of one’s self, actions, and environment.

Teenagers deal with struggles of Control in their daily life. Their bodies, their time, their friends all seem like they could spin out of their control at any time. Additionally, they experience a plethora of emotions daily that can easily overwhelm them, should they lose control. As a result, the team decided to pursue the central theme of Control, especially when framed in the context of Influence.

Game story

The story of the game takes place in current times, and places the player as a human who aids a group of Mice in the fight against the mysterious Controllers. These beings have infiltrated Mouse Burrows all over the world and have inadvertently unleashed the full potential of Mousekind: Mice in the game can walk upright and speak, and have a range of emotions as wide as any human’s. Mice feel drawn to them, for they provide unmeasurable power.



Figure 1: Game Characters – from left to right: Advisor, Leader, Captain, Tradition Keeper

The particular group of Mice that the player is roped in to aid, however, has realized that Controllers are harmful for Mousekind. They enlist the player's help and place them in command of a small group of Mice in their quest to confront a group of Controllers who are threatening their immediate area.

The characters pictured in Figure 1 will accompany the player throughout the whole game. These characters are not portrayed as flawless leaders but rather as flawed individuals that are leading with their own insecurities. The Advisor is curious and sometimes reckless, the Leader is insecure and comes from a family where too much was expected of him, the Captain is strong but doubts her abilities and the Tradition Keeper is prone to seeing the world in terms of black and white. The player will see how these mice work through their own problems together throughout the game.

As the game progresses, the player's group encounters other Mouse groups that have given in to the Controllers for different reasons. The player's group helps these Mice and recruits those who wish to help in their fight. As they encounter the different groups, the different supporting characters that accompany the player will unravel their own problems and insecurities and be forced to deal with them and overcome them with the player's help.

Mechanics addressing messaging

The game's goals were drafted in a way that stressed the importance of creating a fun product, and the development team was encouraged to build game systems that embraced the messaging, rather than having them meet strict curriculum goals.

The result of this process was the consummation of the game systems, which are described in the following sections, along with a look into the way in which they further the game's message.

The decision to implement these systems was not coincidental, nor did we get them right at the first, second, or even third try. Combat, as the main system, was chosen to carry the weight of the metaphors since it is the activity in which players will engage the majority of the time. Missions serve the purpose of communicating the game's story in a way that is not too text-heavy and which places players at the core of the action. Conditions were included as a means to communicate the risks and consequences that are related to substance abuse. The Multiplayer aspect was implemented with the goal of creating a positive peer group for the player.

Combat

Combat is the main interaction in the game. It is the way that players progress through the story and the activity in which players engage the vast majority of the time. As such, great care was put into developing a solid metaphor for combat to rest upon.

Combat in the game is meant to represent tense situations in which our target audience might be pressured into giving into temptation. As mentioned before, the main goal of the game is not to equate substances to evil, but rather to provide our players with the tools to recognize and navigate situations in which they might be pressured, coaxed or convinced to do something that they are not quite sure they want to do. After looking at these situations, we recognized elements that liken it to combat: they are battles of sorts in which both parties are fighting over control of the situation.

As such, combat was designed as a metaphor for these situations. When one of the mice controlled by the player encounters an opponent, they hold a conversation in two levels: first and foremost, they scuffle like the mice they are. But, since these mice have recently found the ability to also communicate with words, they also talk as they scuffle.

All of this is framed in real-time, menu-based RPG-style combat, similar to what would be found in traditional RPGs. During their turn, players must quickly choose what move, or Power, their mouse will execute next. Each move weakens the enemy or strengthens the player's mouse.

Pressure

The most distinctive element of combat is the Pressure system. Pressure is displayed to the player via a central gauge with three main areas—at any given time, the combat can have one of three pressure levels: low, medium, or high. This represents the different types of situations in which the players might see themselves involved, as not all pressure situations will be aggressive, but rather they could be persuasive or even appear to be logical. Pressure affects most of the actions taken by

players in combat, and they will be expected to learn how to successfully navigate the different pressure situations.



Figure 2: Concept art for the Pressure Gauge (art not final)

Each Power available to the player during combat has an inherent Pressure level, meaning that it will be the most effective if used when the Pressure in combat is at that level. Additionally, characters cannot bring all known Powers into combat but must rather choose what combination of Powers to bring. As such, a character will not be prepared to navigate every kind of situation but rather will have to learn how to keep a situation at a pressure level at which they're most comfortable.

All in all, each character the player can take into battle and each enemy they face in the game will thrive at a specific level of pressure. Adapted to the game's lore: warriors are more forceful and thrive at high pressure; mages are more logical and like mid-pressure situations; and rogues are more subtle and casual, and look for low pressure situations.

In general, the Pressure system aims to communicate where pressure comes from, and how to deal with pressure.

Dialogue and response tables

The mice don't just talk randomly as they fight—they hold a conversation. The game is designed such that each combat is kicked off with an opening remark from the bad guy, which is displayed at the top of the screen. It will then be the player's turn to choose a move to attack the bad guy—when this happens, the system will look up an appropriate response to what the bad guy initially said and, depending on the pressure level of the move, will pair the response to the attack and display it.

As this goes on repeatedly, the mice and the bad guy will appear to be having a conversation as they scuffle. Through all of this, the player will be learning of viable ways to respond to potential situations with which they might not be comfortable dealing normally. However, the nature of the text will change depending on the different attacks that are performed.

An example of this is as follows:

- Bad guy attacks, saying: "It feels so good. Think of all the fun you could be having"
- Depending on the Power the player chooses, the mice could say:
 - For a Low Pressure Power: "If it's so much fun, why are you trying so hard?"
 - For a Medium Pressure Power: "I don't think I need you to enjoy myself".
 - For a High Pressure Power: "Do I look like I need you?"

We call these banks of responses "Response Tables", which are crafted to cover all possible types of responses to the bad guys' remarks. The different types of responses come from the different pressure levels of the Powers that the player might execute. A Low Pressure Power, for example, is paired with a Low Pressure line of dialogue - and the same is true for other Pressure levels.



Figure 2: Early concept art for game interactions (art not final)

A strong point of the game is the vast variety of attack phrases and possible responses. This ensures that combat doesn't feel overly repetitive while at the same time providing for enough repetition for the players to become familiarized with the phrases. More importantly, this text appears to be secondary to combat and the player does not, seemingly, need to read it at all to be successful in the game. However, it is a head fake since the text is featured prominently on the screen and is visually engaging.

The main strategies that dialogue in combat aims to teach are:

- Saying "no".
- Giving a reason.
- Giving an alternative.
- Standing up to pressure.
- Stress management.
- Self motivation.

Missions and themes

Combat in the game is encased in Missions, meaning that players get to the different combats by sending their Mice on Missions. Each of these Missions is comprised of sequential Stages and aims to tell a contained story that moves the general story forward. Missions are straightforward: the player sends a Mouse on a Mission, waits for the Mouse to reach its destination and then jumps into the action by helping the Mouse confront the bad guys it encounters.

As the player progresses through the story, they will unlock new locations for their mice to go on Missions. Each of these locations represents a real world setting. The reason the player's mice explore these locations is because each of them is inhabited by a group of mice that, in one way or another, have been affected by the Controllers.

Each group of mice, and consequently each game location, is presented within a theme. These themes revolve around the central concept of Control as described earlier, and are presented as follows:

- In the Park, the core emotion is Excitement.
 1. Excitement without Control leads to Excess.
 2. The player meets a mouse group that sought excitement, taking bigger and bigger risks until they went too far.
- In a Human House, the core emotion is Discipline.
 1. Discipline without Control leads to Intolerance
 2. The player meets a group of mice who, on their quest to distance themselves as much as possible from the Controllers, languished into hermitage. These mice see everything in terms of black and white, and persecute anyone they see as flawed.
- In the City, the core emotion is Rebellion.
 1. Rebellion without Control leads to Chaos.

2. The player meets a group of mice who were champions of brave and new ideas. They were corrupted by the Controllers into rejecting everything around them in service of making the world pay for the slights done to them.
- In the School, the core emotion is Community.
 1. Community without Control leads to Conformity.
 2. The player meets a group of mice who suffered from loneliness and loss. All they wanted was to fit in, so they changed so much that they ultimately lost their sense of identity.
 - In the Suburbs, the core emotion is Confidence.
 1. Confidence without Control leads to Arrogance.
 2. The player meets the most powerful and proud mice. The Mouse Tribe became arrogant, picking on other mice who they saw as being beneath them.

Recruiting new Mice

As the player moves along the story and explores the different locations, they will recruit new mice to join their cause. These new mice will be members of the different groups they meet along the way. In this manner, the recruiting mechanic supports the message of helping those in need and stresses the fact that these mice are not beyond help. Rather, the player incorporates them to their group and sends them on missions just like every other mouse in the group. These mice become part of the family.

Blind Missions

Not all missions include a combat section. Rather, some Missions will require the player to send their Mice to a location where they will need to fend for themselves. The player will need to choose the Mouse that they feel fits the job better and trust that they will be able to do well on their own. This is meant for players to send their Mice into the unknown, trusting that they will do the right thing.

Conditions

The most literal translation of messaging into game mechanics, Conditions represent long term effects that affect mice. Metaphorically, Conditions are meant to represent the Mice being under the influence of a specific substance or being put through a difficult situation. In terms of game mechanics, mice can obtain conditions by failing at a combat or as a result of a blind mission. Additionally, some new recruits might join the player's group already with a condition that is a result of their troubled past.

In the game, Conditions are always curable. No Mouse is ever lost totally to a Condition. This is meant to represent the fact that any person who has a Condition can be helped. It's not a matter of winning or losing, but rather one of working through problems with the help of others. Examples of conditions in the game include: ashamed, alone, injured, dazed, and insecure.

Multiplayer

The multiplayer element in the game is light, but goes a long way in letting the player know that they are not alone in their fight. Players are able to select a leader for their group of Mice, and enlist their friends' leaders' help on missions. This way, it becomes evident that their friends are also battling the same forces and they can even get a notion of how far into the struggle they are by comparing against a friend's level. The goal is to create a positive peer group for the player, to reinforce the notion that there are people out there who are working toward the same goals.

Meeting the goals

All in all, the relationship between mechanics and goals is bidirectional. The game was designed to meet the broader initial goals, but opportunities were seized during the development process to address smaller but equally relevant goals via the use of game mechanics.

The design of the combat system is central to both the game experience and the messaging embedded in the game, becoming the heart of the experience. It seems natural that the biggest part of the messaging be carried forth by the main game system. The peripheral systems support the central design and the central theming.

In the periphery, Missions address bit-by-bit learning by equating it to sporadic gameplay. Conditions help drive home the fact that there exist real world consequences to our decisions and that making the wrong choice is not the end of the world—rather, there is help for those who seek it. The game story guides the player through different high pressure situations by placing them deep inside different conflicts that address real world problems; and at the same time it puts the player in contact with characters that have had a hard time dealing with everyday pressures. Finally, the Multiplayer system reminds the player that they are not alone in this fight.

Conclusion

The aim of this paper is to show a practical example of how game mechanics can be used in a game to help support a core educational message. By exposing the development process and thoughts behind this game, the hope is that other game developers might borrow from the methodology taken in this project and apply it to the extent that they see fit in their own games.

By providing several examples of how the mechanics of the game propel the messaging while retaining their value as fun game mechanics, the aim is to prove that it is possible to create a dialog between the game's mechanics and its educational messaging. Ultimately, the messaging should drive the design to the same extent that the design drives the messaging.

The hope is that the fact that the development team for the project is comprised of both a traditional game development studio and two nonprofit organizations serve as inspiration for other organizations and studios to seek similar partnerships.

References

- Bradley, M. (2002). *Yes, your teen is crazy!: Loving your kid without losing your mind*. Washington: Harbor Press.
- Brathwaite, B. (2010). The mechanic is the message (*The mechanic is the message*) Retrieved from: <http://bbrathwaite.wordpress.com/2010/03/14/my-games-the-mechanic-is-the-message/>
- Califano, J. (2009). *How to raise a drug-free kid: The straight dope for parents*. New York: Fireside.
- McGonigal, J. (2011). We don't need no stinkin' badges (*GDC 2011*). Retrieved from: <http://gdcvault.com/play/1014576/We-Don-t-Need-No>
- Scott, S. (1986). *How to say no and keep your friends: Peer pressure reversal for teens & preteens*. Massachusetts: Human Resource Development Press.
- Scott, S. (1985). *Peer pressure reversal: An adult guide to developing a responsible child*. Massachusetts: Human Resource Development Press.