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Classcraft: from gamification to ludicization of classroom management

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Abstract In this article, we discuss the concept of gamification, based on a literature review and preliminary feedback from teachers using Classcraft, a role-playing game supported by a digital platform and a mobile application that were developed to answer high school teachers' classroom management needs. Our results come from two experiments in France and Quebec and also from an online survey that was made available on the *Classcraft* platform. These results promote a model of gamification that consists of considering the experience of the students, rather than the game itself, and they confirm that a game is consubstantial to its player. Therefore, we argue for the use of the term "ludicization" to emphasize that transforming a situation into a game does not consist of using elements that have a game-like aspect, but rather of a non-essentialistic vision of play, generating a metaphor around the situation to build a *reflexive space* where the nature and meaning of interactions are modified.

Keywords Classcraft · Gamification · Ludicization · High school education · Classroom management

1 Introduction

Classcraft is a role-playing game that was developed for classroom management at the high school level. The game is now available as a mobile and web application. Teachers can create teams in the game and assign an avatar to every student, as well as points and "powers" as rewards for proper classroom conduct. Thus, the objective is to transform the manner in which students experience coming to class by adding a playful dimension.

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The term *gamification* is generally used to describe the process in which one integrates aspects of play into a situation that is initially not playful. However, in this article, we argue for the use of the term *ludicization*, following from the idea that it's less about "making a game" (*gamify*) than it is about "making it possible for a situation to be seen as ludic" (*ludicize*). Thus, in our first section, a brief literature review pushes us to argue for the use of the term *ludicization* and to expose the key components of this concept. A second section presents the game *Classcraft* and the experiments we have conducted around the game. In the last section, we present an analysis of the feedback of the first usage experiments of *Classcraft* and the elements we have decided to use to define the concept of *ludicization*.

2 From gamification to ludicization

2.1 Gamification, origin of a neologism

According to Deterding et al. (2011b), the word *gamification* appeared in 2008 in the digital media economic sector. It was popularized during different conferences (Google Tech Talk) by Zimmermann in 2010 and Amy Jo Kim in 2011 (Kapp 2012). Thereafter, the word spread across the fields of academic research, marketing, and game design (Bonenfant and Genvo 2014). Since, different definitions have been suggested, such as, "*Gamification* is the use of game design elements in non-game contexts" (Deterding et al. 2011b) and "using game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp 2012).

Gamification should be distinguished from *ludification*, which means the spreading of games in culture, a phenomenon described by Henriot (1969) before the development of digital technologies. *Gamification* is applied to various fields, such as urban architecture or employees' relationships in companies, but the concept flourishes for the web interfaces design sector. Therefore, whether it is for catching the attention of consumers or building the loyalty of digital social network users, *gamification* is an economic approach of attention (Goldhaber 1997). This approach aims at optimizing the mental engagement of an individual, ordinarily for economic purposes.

Etymologically, the word *gamification* is based on the Latin word *facere*, which reflects the idea that it is possible to "make the game." Therefore, *gamification* is considered to be an automatic and non-problematic transformation (Silva 2013). In their article published in 2011, Deterding et al. improve their first definition by underlining that *gamification* is "the use (rather than the extension) of design (rather than game-based technology or other game-related practices) elements (rather than full-fledged games) characteristic for games (rather than play or playfulness) in non-game contexts (regardless of specific usage intentions, contexts, or media of implementation)" (Deterding et al. 2011a). This definition still suggests that some specific elements belong to games. However, these authors also consider the experience of the player so that *gamification* would consist in addressing playfulness (the experiential and behavioural dimensions) and in using these dimensions for the design of structures with ludic affordances (Ibid.).

2.2 Ludicization, play vs. game

Bonenfant and Genvo emphasize that *gamification* "consists in adopting an essentialist approach of ludic phenomenon" (Bonenfant and Genvo 2014). Therefore, with the support of the seminal work of Henriot (1969); Genvo (2013) proposes to adopt the word *ludicization* in order to focus our attention not on the artefact but on the situation that takes place when an individual accepts to play. Sanchez & al. adopted a similar approach in a work dedicated to develop a theoretical model of play for educational purposes (Sanchez et al. 2015; Sanchez and Emin 2014).

According to this model, there is no specific game element that can be used to make a game (*gamification*), but it is possible to subtly combine elements in order to design a learning context where play can take place. We consider that the term *ludicization* is more appropriate when it comes to design a learning situation that combines educational purposes and ludic characteristics. Indeed, *ludus*, the Latin root of *ludicization*, means both game and school work. In addition, the suffix "-icization" does not mean that it is possible to "make" the game, as suggested by the suffix "-fication" (*facere*) of *gamification*, but mainly that it is possible to transform the situation (Sanchez 2014). Indeed, play emerges from an intention, and it is not "in the materiality of objects, in the factuality of gestures, that we have some chance to find ludic elements"[1] (Henriot 1989). As a result, our approach leads us to inscribe the issue of game-based learning in the existentialist philosophy and to focus our attention on the meaning of the situation and the behaviour of the player within a frame that enables its autonomy.

2.3 Research aims

This article proposes a discussion of the *gamification* concept based on an empirical study. We describe *Classcraft*, a platform that facilitates the *ludicization* of classroom management. We analyse preliminary results of two experiments in France and Quebec in order:

- To document the implementation of Classcraft in different classroom settings and to show how *ludicization* enables the teacher to manage classroom interactions,
- To identify the key elements that have been used for the *ludicization* process and to understand how they affect student behaviour,
- We also discuss the implications of the *ludicization* of classroom management and reflect on potential tensions that became apparent from this study.

This article does not deal with the efficiency of *Classcraft* for classroom management. Though the game has received a lot of positive feedback from users (both teachers and students), our data does not enable us to measure the added value of the game. However, we aim at developing a more comprehensive approach of how *ludicization* may influence students' behaviour. This will be done through the concept of *reflexive space* (Sanchez 2014). Indeed, the core hypothesis of our study is that, rather than focusing on the use of game elements such as points or rewards in a mechanical way, *ludicization* consists in selecting a metaphor for the classroom situation and creating a *reflexive space* in which the nature and the meaning of interactions include aspects of both play and learning.

[1] Our translation

3 Classcraft, a role-playing game for classroom management

In this section, we describe the game and the context of our experiment in two schools in France and Quebec.

3.1 A multiplayer game

Classcraft is a cloud-based platform that works across many devices. The service requires no installation (other than mobile apps, if one decides to use them). The game operates on a real-time web engine, so events in the game are pushed in real time to other users' devices, much like in a normal online video game. The game acts as augmented reality in the sense that there is no 3D game world; rather, the game world is real life, with the game acting as a digital layer on top of it.

The objective of *Classcraft* is to transform the classroom into a role-playing game for the duration of the school year. For the teacher, the point is to foster desired behaviour in students. This behaviour may depend on the different school contexts, but it is related to classroom management. For example, it is expected from students that they arrive on time and that they do their homework before the course. They are also expected to participate in class, help other students, collaborate during school activities, and get good grades. Classcraft helps to make appropriate and non-appropriate behaviour clearer to students through a system of rewards and penalties, depending on the school rules. As a result, it is positive behaviour that enables students to progress in the game and, for the student, the goal is to gain levels and thus acquire powers, as well as to advance their avatar and support their team.

Inspired by role-playing video games or RPGs (for example, *World of Warcraft*), the first version of *Classcraft* was conceived by Shawn Young in January 2011. The first version of the digital platform, which was very basic, was built for personal use. Three years were then spent improving the rules. The first public version was made available in February 2014 as a beta version. The official global launch of the game was in August 2014 (Fig. 1).

Classcraft is not related to a specific school subject, and the duration of the game depends on the teacher's expectations (from a few class hours to the entire year). The students play the game during school hours and outside of class. In *Classcraft*, students are placed in teams of four to six members and play as Mages, Warriors, or Healers. Warriors have more Health Points (HP) than the two other character classes and have powers they can use to protect their teammates from losing HP. Healers have less HP than Warriors but more than Mages, and they are the only character class that can replenish other players' HP. Mages have the least HP, but they have the most powerful powers, often benefitting their entire team. Thus, the character classes are based on archetypes found in RPGs (tank, support, and dps). Based on their character class, students gain access to powers that they can use as they see fit (as long as they have sufficient Action Points, or AP). These powers are either related to game mechanics (heal another player, protect another player, regenerate Action Points, etc.) or to privileges having an impact on players' real lives (being allowed to eat in class, listen to one's iPod in class, hand in an assignment a day later, etc.). These powers are either beneficial to the individual or to the individual's team. Thus, students want to acquire these powers to help themselves and their teammates.

Fig. 1 screen capture of the game

In order to acquire powers, the player must demonstrate behaviour that is expected of him by the school, such as participating in class, helping other students, etc. These actions are rewarded with Experience Points (XP), which are distributed by the teacher, who plays the role of Gamemaster. These points enable students to level up and acquire powers and Gold Pieces (GP), which they can use to customize the appearance of their avatar. However, if a player exhibits behaviour that is inappropriate, such as arriving to class late or not doing classwork, the teacher can remove HP. If players lose all of their HP, they receive a sentence and their teammates also lose HP. The sentences are real-life punishments, such as detention, copying a text, and so on. When players use their powers to help teammates, they are automatically awarded XP. Thus, students are rewarded for helping teammates and penalized when their fellows behave inappropriately too often.

Every class, the teacher generates a random event, which has an impact on gameplay (for example, "Everyone loses 10 HP") or classroom dynamics (for example, "Everyone must speak like a pirate for the day"). These events are random and affect the entire class. Like the powers, sentences, positive actions, and negative actions, these events can be completely customized by the teacher to adapt the game to their specific classroom setting.

Because these aspects have a direct impact on the real lives of the players, it is important for the teacher to customize them so that they are adapted to his students and classroom setting. For example, one of the default powers is to be able to listen to music during class work. However, in certain schools this is not possible (or permitted), so the teacher can then alter the power to change its effect.

Classcraft is first and foremost a web application (it operates in a browser connected to the Internet). To play, the teacher projects the application in front of the classroom and manages all aspects of school life. In a setting where students have access to electronic devices, they can connect to the platform and customize their avatar, activate powers, and access classroom content. One can also play *Classcraft* on smartphones and tablets by using the Android and iOS apps. Thus, the game consists of adding digital elements to the classroom and *ludicizing* real-life interactions as they occur, without influencing the subject matter.

3.2 A large diffusion across the world

Since it launched in August 2014, *Classcraft* has gained rapid usage by many teachers. Indeed, as of September 13, 2015, more than 5000 teachers were using *Classcraft* in more than 75 countries (eight languages). This represents over 150,000 students connecting regularly to the platform. This does not include classroom settings where students do not actually connect to the platform. A class is considered active if more than 50 game events, concerning at least five students, were recorded in the previous month. If we take into account inactive accounts, more than 575,000 accounts have been created in the platform since its launch. Also, more than 1.1 million game events (using powers, losing HP, gaining XP, etc.) occur each month. The following graphs show constant growth, from September to December (the drop in the last week can be explained by the Thanksgiving holiday in the United States) (Fig. 2).

This data shows that *Classcraft* has gained approval from its market and meets the needs of numerous teachers.

3.3 Elements of play in Classcraft

The design of *Classcraft* rests on the combination of different game features described by Caillois (1967). First of all, *Classcraft*, directly inspired from massively multiplayer online role-playing games (MMORPGs) such as *World of Warcraft*, is itself a role-playing game (*mimicry*). An avatar represents each player. *Classcraft* also leverages competition (*agon*). This competition exerts itself against the game itself, which, based on one's behaviour, leads to gaining or losing points. It also exerts against the entire class because the points allow one to advance in relation to one's classmates.

Another gameplay element that is leveraged in *Classcraft* is that of randomness (*alea*). Indeed, every class starts with a random event that has an impact on the entire

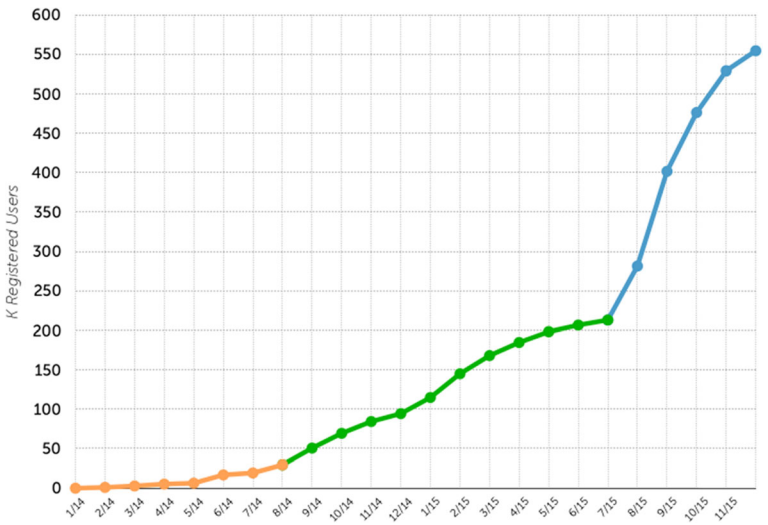

Fig. 2 Traction since September 2014

class. Randomness also manifests itself when, having lost all HP, the player must throw the "cursed die," which can have profound consequences like detention.

As a result, the design of *Classcraft* does not limit itself to mobilizing *gamification* elements (avatars, points, etc.) but consists of the combination of multiple game features to create a situation in which the student will find a favorable context to develop a *lusory attitude* (Suits 1990). This combination most likely explains some of the success of *Classcraft*.

4 Methodology and data collected

4.1 Two experiments in France and Quebec

Other than the results pertaining to traction within a global market, the data we have pertains more specifically to two experiments that began in September 2014 and have continued for the duration of the school year. The first one is in a history-geography class (32 students) in grade 10 at Germaine Tillion lycée in Sain Bel (Rhône, France), and the second one is in two physics classes (66 students) in grade 11 in Sherbrooke (Quebec, Canada).

In both cases, the schools have approximately 800 students in a well-off social context. In the case of the French experiment, the class of 35 students had a group of 10 described by the teacher as undisciplined, talkative youths who recognized themselves as having inappropriate classroom behaviour but stated that they were unable to control themselves. Many of these students said that they are badly oriented, and many are anxious about future academic challenges as they arrive at a new school where many of their classroom peers are strangers. In the case of the Canadian experiment, the students are generally academically successful and have access in class to a personal portable computer that is connected to the Internet.

The approach to this study is based on an ethnographic methodology (Whitehead 2004). The aim was to observe how Classcraft was experienced but also to record information about how the game was implemented depending on the different contexts and their specific constraints. The participation of the two teachers (co-authors) involved in giving the course allowed for a holistic approach to the case study design. The aim was to understand how the implementation was carried out in the two contexts and which elements are involved for the *ludicization* of classroom management. The data collected encompassed in situ observations and feedback from the teachers.

Also, an online survey was made available on the *Classcraft* platform, which 227 teachers answered on a voluntary basis. The goal of the questionnaire was to determine, qualitatively, the teachers' perception of the effects *Classcraft* has had on their classroom. Respondents were mostly from the U.S. (61 %), Canada (13 %) and Australia (7 %). The remainder of the respondents (19 %) were from 30 different countries.

The questions in the questionnaire were the following:

- Which grade(s) do you teach?
- When did you start using *Classcraft* in your classes (month/year)?
- For each hour of class, how much time do you spend playing *Classcraft*?
- *Classcraft* has had a positive impact on student engagement in my classes?
- Please rate the degree to which you agree with the following statements.

- *Classcraft* has had a positive impact on the general classroom atmosphere.
- *Classcraft* has increased students' fun.
- After implementing *Classcraft*, student attendance has improved (tardiness, absenteeism).
- After implementing *Classcraft*, I have seen an improvement in the overall grades of my students.
- After implementing *Classcraft*, I have seen an improvement in the overall efficiency of my classroom.
- The help section in *Classcraft* is helpful.

- How have you modified the powers to fit your classroom?
- How have you modified the sentences to fit your classroom?
- Have you ever invited students to help you modify the rules or powers?
- Please rate the degree to which you agree with this statement: "*Classcraft* is more effective because of student involvement in deciding the rules."
- How has *Classcraft* affected behaviour in the classroom?
- How has *Classcraft* affected your students' motivation?
- How has *Classcraft* affected your students' academic performance?
- How else has *Classcraft* affected your classroom?
- How has your administration reacted to *Classcraft*?
- How have the parents of your students reacted to *Classcraft*?
- How have your colleagues reacted to *Classcraft*?

The questionnaire aims at drawing a portrait of the use of *Classcraft* in different contexts and to gather information for different dimensions: the context for the adoption of *Classcraft*, the way *Classcraft* is integrated into the teacher practices, and the impact of *Classcraft* on students' behaviour and achievements as perceived by the teachers. This questionnaire also aims at identifying the core elements of *Classcraft* that teachers take into consideration in order to *ludicize* classroom management.

5 Lessons learned from the school experimentations

The purpose of this article is to document the implementation of Classcraft in different classroom settings, to identify the key elements that have been used for the *ludicization* process. In this section, we describe the way the game was played in the two contexts, and we analyse the results of these experiments.

5.1 Description of two experimentations

To experiment with *Classcraft* in her classroom in Sain Bel (France), the teacher followed the tips given on the website: Once they are introduced to the game, the pupils can choose to play or not. All the pupils, boys and girls equally, agreed to play and were asked to choose their five teammates following the teacher's instructions: Each team should contain different kinds of pupils, slow achievers and good learners, with or without behavioural difficulties. It should be noticed, however, that this rule has been only partially followed and many students groups were rather homogeneous.

Boys appeared to be more involved in the game, but some girls were also deeply committed with the game competition.

The parents have been informed, and they have shown some interest in the game, if not being totally enthusiastic about the project. During the meeting dedicated to present the game, they asked questions, and some of them sent positive feedbacks like, "*I would have liked to play this game when I was a pupil*." As advised by the headmaster, some rules of the game have been modified for compliance with the current code of conduct of Sain Bel. He particularly insisted on the fact that all pupils must be treated equally. In addition, what is explicitly prohibited by the current code of conduct—such as using mp3 players, audiphones, and eating in class—cannot be allowed in the game. The modifications have been designed by the pupils themselves during dedicated class sessions. Some powers that violate the code of conduct (eating in class, playing music) have been replaced by equivalent and compliant ones. The players had to understand the aim of the power and the reason why it is forbidden in the code of conduct. For instance, "eating in class" is not allowed because it causes some additional work for the cleaning staff. It has been changed to "eating a sweet" since "eating a sweet" provides an equivalent pleasure to "eating in class" without creating the need for additional cleaning.

Then a "debating session," whose subject was "*Classcraft*, a perfect game for Germaine Tillion high school?" took place among the pupils. During the debate, the pupils were asked to reflect on the experience and to identify the model of a 'good student' implemented into the game. The teams were invited to produce short videos on the same subject. On these videos, they formulated the image of classic teaching and the main characteristic of a 'good student' at school, as well as the aspects of the game they enjoyed the most: freedom, positive feedbacks, and powers. This 'debating session' plays the role of a debriefing session dedicated to foster reflection and metacognition (Garris et al. 2002; Gee 2003).

The game is now played each lesson, but the teacher faces some technical difficulties: The computer in the classroom cannot be used to show the game platform because it is filtered out by the firewall. For two months, the teacher used the mobile application, disturbing both the class (because she was forced to look at the phone instead of the pupils) and the game (because she was unable to show the website). She is currently using her own computer together with a mobile phone connection to show the website and manage the computation of the points.

As for the experimentation in Sherbrooke, the teams have been chosen by the teacher himself, based on the previous student achievements, so as to obtain balanced teams in terms of scholarly performance. The default rules have been used. Neither the parents nor the administrative staff have been previously informed about the game. They did not interfere during the experiment. The game has been played during each lesson, without technical problems, and the pupils accessed the platform using their personal computers. This experimentation occurred in the game's creator's classes, so no modifications to the core rules were necessary.

5.2 Comparison of the two experiments in terms of level of use

The experimentation in Sain Bel resulted in a total 1705 game events for the duration of the school year in a single class, whereas the experimentation in Sherbrooke resulted in 11,969 in one class and 11,186 in the other.

On average, players in Sain Bel had 44.3 events attributed to them (gaining XP, losing HP, using a power, etc.), with a standard deviation of 13.2. The players in Sherbrooke had an average of 334.6 events each, with a standard deviation of 64.7 (Table 1).

A breakdown based on gender is presented in the following table:

This comparison of the two contexts shows that the levels for the use of the game vary among contexts and players. This is probably due to the difference between teachers' experiences and commitments. For the Sherbrooke experimentation, the teacher is also the author of the game. In Sain Bel, the teacher uses the game for the first time. However, there is no difference based on the gender of players in terms of number of events attributed to them.

5.3 Feedback on the Sain bel experimentation

The teacher stressed that the game is an efficient way to enhance motivation about scholarly work: Work groups are often built as in the game, and the accomplishment of the scholarly productions is greater, especially for slow achievers. Oral participation also increased in particular because the teacher intensified the usage of *Classcraft* to reward actions. They earn points by answering questions (10 XP), being involved into classroom activities (60 XP), or helping another student (75 XP) or the teacher (20 XP). Pupils ask about their points, albeit not systematically, and they work hard to get them.

Nevertheless, behavioural problems have not disappeared completely. This highlights the fact that the teacher's role remains complex even in a playful situation. When the teacher acts as game master, their role is not deeply changed. The assignment of the points is not automatic: The teacher is still the one who evaluates and punishes. He sanctions chatting (10 HP), insolence (20 HP), slacking off on schoolwork, or anyone breaking the rules of the learning community as cause for losing Health Points. But the nature of the punishment changes. Explicit game rules accepted by the players constrain the assignment of the points, and positive actions induce explicit positive feedbacks.

An important goal of the game is to build upon collaboration between pupils to induce better behaviour from those who show frequent misconduct. But collaboration between pairs, understood here as working toward a common achievement, remains problematic. It often takes the form of mutual assistance for scholarly work. It exists outside the strict game context, through direct as well as remote relationships (phone, Facebook). Involved pupils did not think to claim their points for such mutual assistance. Also, misconduct in class did not always lead to collaboration. Indeed, watchful pupils sometimes failed to show their teammates the correct way to take part

Table 1 Average number of events per player, by gender

	Boys		Girls	
	Average	Stand. Dev.	Average	Stand. Dev.
Sain Bel	45.1	15.9	43.6	10.4
Sherbrooke	342.3	71.4	327.3	57.9

or speak in the class. Also, when it comes to choosing powers, individual powers were strongly preferred to collective ones. With the teacher being reluctant to withdraw health points, teams seldom stuck together. Since then, the teacher has intensified usage of the game, including for punishments. This has induced the pupils to rely more on collective powers. The players are now eager to acquire collective powers.

5.4 Feedback on the Sherbrooke experimentation

In Sherbrooke, the game is played every lesson, so about three times a week per group. As in Sain Bel, the teacher reported increased motivation and deeper engagement in class work. Pupils tend to show more participative behaviour in every dimension of the lesson, including answering questions and working in class. They want to claim points. XP is attributed for participating well in class (75 XP), asking a pertinent question (100 XP), and helping other students online (75 XP) while HP is removed for tardiness (10 HP), making fun of another student (20 HP), or handing in homework late (30 HP).

Pupils on the same team are more united than in the Sain Bel case. They help team members when they lose health points. Usage of powers as a mutual assistance device is common, and they show the ability to self-govern. As the teacher often withdraws health points, pupils often feel unsafe, so they must develop survival strategies or modify behaviours not to lose health points (and gain experience points).

Also, computer access to the game allows for interactions between pupils without disturbing the course. They then have more opportunities to assist one another, to visit their status, and to train their partners. They then also show more interest for the game since their interactions are more frequent, even on a voluntary basis.

5.5 One game, different plays

A positive effect can be attributed to introduction of the game for the two experiments. However, classroom observations show that the ways the game is adopted differ among the two contexts. Different factors seem to play a role on how the game is played, such as school acceptability and technical considerations (such as the Internet connection and the availability of computers for the teacher and the students). The way the students are committed with the game also varies among students depending on the context. Thus, these experiments also emphasize the crucial role of the teacher who:

- adapts the game to the school context
- maintains the role of game master
- helps or does not help the students to reflect about their experience

6 Classcraft, a reflexive space

The purpose of the article is also to discuss the implications of the *ludicization* of classroom management. In this section, we offer an analysis of the game and observations based on the concept of *ludicization* as defined in the first section and on the answers provided by teachers to the online questionnaire.

6.1 From simulation to metaphor

Digital games are generally based on a digital model that allows for reproducing a reference situation, an ordinary and real situation. This situation might be, for example, a physics system (*Angry Birds*[2]), a historical period (*Civilization*[3]), or the management of a city (*Sim City*[4]). The term "simulation" refers to the idea that, based on this digital model, it is possible to reproduce a reference situation and to get experience from that. Thus, it refers to the idea of an "experience of second kind" in contrast with a "first kind," which is about the "immediate experience" (Varenne 2006) with the reference situation. Therefore, simulation is a field for experimentation that allows living a true empirical experience without any consequence. This aspect of simulation is very often highlighted by authors who are involved in research into game-based learning. It is also used to design games for educational use. However, in the case of *Classcraft*, the idea of simulation does not account for the environment developed in the game. *Classcraft* can be seen as a trope (Sutton-Smith 1997). It means that, merely to simulate a reference situation, the expressed ideas within the game are interpreted differently in order to build an imaginary world. The classroom becomes a battlefield where teammates cooperate and compete with other teams of players. Teacher T14, expresses the idea that this imaginary foster students commitment. In addition he also explains how he reinforced the "epic" character of the game: "*I have changed the explanation of powers to be more "epic". Exams are battles. Classes are trainings, etc.*"

Although *Classcraft* is not based on a simulation, there is an analogical relation between elements of the game and those of the classroom organization. For example, in *Classcraft*, mutual educational support is represented as powers that the healer can use to "heal" teammates or exclude them by pushing them to "fall in battle"; detention is represented by death. Simulation becomes a metaphor with a hidden meaning that is of acceptable academic behaviour, which is behind the imaginary world of *Classcraft.*

Furthermore, the distance between the metaphor and the reference situation (the second degree in the game) gives power and ontological significance to the game because as in literature or art in general, the metaphor captures the essence of a situation that it describes. Therefore, *Classcraft* is a refined form of the classroom organization, and the player is led to focus on the core of the situation. *Classcraft* can be considered as a way to metaphorize the functioning of a classroom as a battle combining collaboration and competition. This metaphorization is a core element of the *ludicization* process. The meaning of classroom interactions is changed, and *ludicization* refers to the fact that *Classcraft* merely consists of transforming the classroom situation, the meaning of students' behaviour, and the students' experience rather than introducing a game in the classroom. This dimension is mentioned by numerous teachers who answered the questionnaire as T15: "*It is tons of fun, and helps to build up a great relationship with students. There is no start to the lesson without the daily event. It is also quite useful that rules are set for students as well as the gamemaster* [sic]. *There is an atmosphere of mutual respect as all have to play by the rules.*" Some teachers also mention a total change of the classroom atmosphere: "*I*

[2] https://www.angrybirds.com/
[3] https://www.civilization.com/en/home/
[4] http://www.simcity.com/

have had a major issue with disrespect in class. We just had two big HP hits in two days, and it was amazing to see them talk to each other and collaborate and strategize in a way that they never would have before" (T7).

6.2 Game appropriation and students' commitment

Another important game dimension is the ability to encourage students' commitment. Teachers usually consider that students' motivation is linked to points and rewards ("*I have had students who would come in and refuse to do their work until I remind them that it will affect ther* [sic] *CC points. They then decide that they better work, or they will be behind everyone else in points.*" (T9) but also to game features such as *alea* and competition ("*Students look forward to the random events and powers being used in the class.*" T13).

Teachers also mention that students' commitment is achieved by transforming educational goals into play goals: "*During their day-to-day work, giving XP is invaluable to show the students the desired behaviours*" (T97). Thus, for students, decoding the teacher's expectations becomes easier. The goals are clear since it is not about behaving in class anymore but about interacting according to the game rules in order to earn points. The *devolution* (*ie.*, the transfer of the responsibility to students) of the teachers' goals (Brousseau 2002) is made easier because the game changes the meaning of their goals, and the game rules are a simple way to put those expectations into words.

In addition, each player is represented by an avatar, which is a projective identity (Gee 2003) in two different meanings: "*Students are very disappointed if they can't have time to access their characters in class*" (T49). First, it allows the players to have a self-experience through introjection. For example, they are led to check the relevance of the decisions they make by earning or losing points. Second, the avatar, an emblematic figure of a warrior, mage, or healer, becomes the projection of an identity that is being built and an experimentation field that allows it to be built: "*I have used* Classcraft *as a way to review lessons. I have created my own* '*boss battles*' *as a way of doing that. Students imagine themselves as their characters* '*fighting*' *with their classroom knowledge. It's very motivating to them*" (T106). Roles played by students help them get involved in the situation: "*I have one kid with serious anger issues. He picked his character based on being able to take quick breaks with his power, and has gotten better about controling* [sic] *his anger so he doesn't lose points*" (T2). For T33, this commitment refers to the game merely than the classroom: "T*he focus for now is only in the game. Still lack the commitment of the class with discipline and study*".

6.3 Feedback and sense of competence

With *Classcraft*, feedback taking the shape of earned or lost points or learned powers is the response given by the game environment to the players' actions. Several teachers underline this point: "*They are aware of the benefits of doing well*" (T31). These feedbacks are also sometimes positive feedbacks and, even if they take the form of a sanction, they seem to be well accepted by students: "*The opportunity of being encouraged whenever something positive is done makes a real difference for students; they love it, and they also accept much more easily when they do something wrong, taking the risks and consequences, and assuming what they do, which is essential*" (E47). Feedbacks are not only reinforcement modalities used to design games based on

a behaviouristic approach, as described by Block & King (1987). They are information with potentially high semantic content that have to be analyzed and interpreted in order to rethink the implemented strategies if necessary: "*On the whole*, *it's helped just to make the students more aware of their behaviours in class*" (T71). From a feedback perspective, what makes this game different from a regular class situation is that this feedback is continuously generated (Mayo 2009). The game offers the students a space of liberty in making decisions. It also gives them information about the consequences of their choices, information that is necessary for the decision-making process: "*When students realize that points are being taken away because of behaviour*, *they start the behaviour around and seeing what they can do to earn points back*" (E6). At any moment, players can judge the relevance of the decisions they are making. Giving feedback is made possible by the fact that the teacher is constantly collecting information about the players' actions and therefore about their ability to follow the classroom rules. So, the game provides the right environment for developing autonomy because it offers the players the liberty of choice and action as well as information, in the form of feedback, which allow them to practice their liberty of choice and action. The game is, in this case, considered as a *reflexive space* (Sanchez 2014).

Moreover, the instant feedback increases the students' feeling of competency. Indeed, losing points or even experiencing "death" in the game is feedback that can be perceived as negative play-wise. However, because of the ludic context, negative consequences are less severe. It is always possible to go forward by carrying out actions to earn points and "resurrect" in the game. This negative feedback does not alter the feeling of being competent while positive feedback, such as earning points or evolving in the charts, increases the feeling of competency. This point is very important to note since the feeling of being competent is a key aspect of academic motivation (Ryan and Deci 2000).

7 Conclusion

Some criticism that may emerge from our experiments is that *Classcraft* is an attempt to increase students' exposure to computer games on top of the exposure that they already have outside of school. We think that there are at least two arguments that can oppose such critics. Firstly, there is a need for every student to reflect on what it means to play digital games. Playing *Classcraft* under the control of a teacher and reflecting about their experience of play might enable students to develop a critical perspective about games and also to foster media literacy. Secondly, we consider that designing game-like situations for classrooms offers the opportunity to change students' school experience so that they derive more pleasure from classroom activities.

The observations that we were able to make show that, depending on the setting for the integration of *Classcraft*, the game is not experienced in the same way by all students. These observations promote a model of *gamification* that consists of considering the experience of the students, rather than looking at the game itself, and they confirm that a game is consubstantial to its player. The game experience seems to depend on a multitude of factors, among which we have identified the institutional acceptability of the game, the equipment available in class, and the way the teacher presents and implements the game. Among these different factors, the role of the teacher and his own appropriation of the game are key.

Another lesson that we learnt from this experiment relates to *gamification* from a theoretical perspective. From the implementation of *Classcraft*, we learnt that *gamification* does not consist in using game elements such as points or rewards in a mechanical way or using "game design elements in non-game contexts" (Deterding et al. 2011b), but rather in metaphorizing a situation to conceive of a *reflexive space* where the nature and the meaning of interactions are modified. Thus, *ludicization* consists of a reconfiguration of the class setting. This *ludicization* translates itself in the implementation of new interactions. In the game *Classcraft*, students are, for example, led to make decisions to "save" other students. Nevertheless, it is mainly the meaning of normal interactions within the classroom that is redefined. It is not about the student adopting behaviour to conform to the class rules but rather about adopting behaviour that, because it takes into account the rules of the game, leads to progressing within it. This progress materializes itself in points or other elements that then can be visualized in the platform. In *Classcraft*, the classroom rules are translated into arbitrary game rules. In this sense, we can say that *Classcraft* is a metaphor of class life. Indeed, it constitutes a refined version of the reference situation, and the player is incentivized to bring his attention to what is at the heart of the situation. This metaphor allows for the implementation of a *reflexive space* within which the player can test his ways of behaving because his decisions translate into immediate feedback. This *reflexive space* thus fosters autonomy.

The importance of adapting *gamification* to the players' profiles has been emphasized, and different methods have been proposed (Challco et al. 2015, Xu and Tang 2015). *Ludicization* offers the opportunity for a new perspective for game design. It emphasizes that the player matters and that the focus should be put on the interactions of this player with the game (considered a system of rules implemented in an artifact) rather than on the game itself. This approach is in line with contemporary approach for game design, such as agile methodologies (Highsmith 2002) or user-centered design (Norman and Draper 1986), where users are involved in the early stages of the design process.

Does *Classcraft* consist of the integration of a game into the classroom or in the *ludicization* of classroom management? The border between game integration and *ludicization* is blurry. Ludicizing does not consist of using game elements in a mechanical way, but rather in conceiving a *reflexive space* where the meaning of interactions is modified. The change of this meaning, the second degree of the situation, is one of the core elements of the *ludicization* process. The behaviour expected from students is not fundamentally changed. They are expected to adapt their behaviour to the ordinary rules of the school. However, the meaning of the actions performed by students is changed by the game mechanics and the metaphor: healing or protecting another player vs doing group work, regenerating Action Points vs doing school work … The difference between game integration and *ludicization* lies in this transformation. The second degree of the situation that stems from the game metaphor, the autonomy offered to the player, the arbitrary game rules, and the challenge are different features that build a space that has ludic affordances and gives the player the opportunity to develop his *lusory attitude*. As a result, the classroom is not the only context with a codified set of rules that can be ludicized. Indeed, *Classcraft* could be easily transferred to other contexts, such as the workplace, where there is a need for autonomy and engagement.

One of the teachers reported that his students do not complain anymore about being in detention in Saturday morning. Indeed, due to the *ludicization* of classroom

management, the meaning of detention is now changed and the player is led to accept the bad consequences that result from "dying" in the game. From this stems the question of player emancipation. The player, in accepting to play the game, accepts to trade his freedom for a freedom constrained by the arbitrary rules of the game (Duflo 1997). *Ludicization* of classroom management should take into account this ethical issue by offering students the opportunity to reflect about their experience and to consider how the behaviour learned during the game can be transferred to non-gaming situations.

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