IDENTIFYING PLAYER TYPES IN THE CLASSROOM FOR EFFECTIVE GAMIFICATION

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Abstract. Gamification is a technique used to introduce the joyful nature of play into learning in order to promote student motivation. But in each class, they are different – in temperament, interests, approach to learning. What works for some does not work for others.

There is no universal practice for incorporating gamification into the classroom, which means that the teacher has to decide for himself what to choose. To be successful, the teacher needs to know in advance what types of players his students are approaching in order to take a differentiated approach when starting to gamify the environment. Lessons should be designed to have engaging gameplay elements and mechanics for each type of player.

The article reviews the existing classifications for determining the types of players that offer the appropriate game elements and mechanics for gamification of learning. This document would be a useful reference for those educators who wish to gamify classroom work.

Keywords: gamification; type of players; game elements; game mechanics; game rewards

1. Introduction

Gamification can be defined as the inclusion of an individual's inherent gaming experience in the learning process (Sezgin et al 2018). It can promote learning by using different game elements and is considered a useful tool, especially to keep students engaged in the educational process (Bouchrika et al. 2021; Saleem et al. 2022; Voinohovska et al. 2023). A gamified learning environment should be designed to contain different game elements to attract all types of players (Arkün Kocadere et al 2018) or as (Dichev, Dicheva 2017) argue, it is crucial to understand the target population of a gamified system in order to gamify a learning environment successfully.

So far, there is no universal approach when implementing gamification in education, which means that the teacher himself decides what mechanics and

elements to choose. The teacher must be aware in advance of what type of players his students are approaching, so that he can take a differentiated approach when he starts to gamify his lessons. In modern educational environments, gamification is used more and more in order to increase the motivation of students and, as an immediate result, to improve their academic achievements (Legaki et al. 2020; Hristov et al. 2023).

The article reviews some of the existing classifications of player types, which include the game elements and mechanics suitable for them, with the aim of effective gamification of training. We are confident that this document will serve as a useful reference for teachers interested in gamifying their classroom work).

2. Elements of gamification

Successful gamification in education requires a good knowledge of the different elements of the game. But the authors are not unanimous in defining them, so at the moment we accept and present those that are the most accessible and understandable. In game design parlance, game mechanics are how the player interacts with the game. The most popular mechanics are challenges, competitions, cooperation, feedback, etc. Each of these can be "physically" illustrated by a number of game elements, the most familiar being points, badges, leaderboards, progress bars, levels, etc.

3. Bartel's types of players

Although there are many classifications of player types, the most commonly cited is that of Dr. Richard Bartle. In his opinion, the types described have limited applicability in building game systems, but nevertheless, this is where most authors start.

Richard Bartle has the four main types of players on two axes (Bartle 1996):

1. Players <-> Environment where the player focuses on the game environment.

2. Action <-> Interaction - player focuses on actions or interaction with other players.

Thus, the four styles of play appear on the chart, with which we must familiarize ourselves before commenting on the game mechanics and elements that stimulate them:

– Explorers love to discover the world, share their discoveries in their community and trumpet: "I found it!".

– Achievers consider collecting points and leveling up as their primary goal, and everything ultimately boils down to that.

– Socializers are interested in people and play is just a background, a platform on which things happen. The most important thing for them is the creation of meaningful social contacts.

– Killers represent the most specific and minority group of players who engage in the game primarily to watch others fail.

Figure 1. Bartle's player types

4. Types of players according to kocadere and özhan

In their study, Kocadere (Arkün Kocadere et al 2018) chose the categorization of Bartle (Bartle 1996) as their basis and analyzed the relationship between mechanics and elements for each type of player.

Game mechanics believed to attract different types of players are listed by (Arkün Kocadere et al 2018) in the first column of Table 1. The elements expected to trigger these mechanics in the gamified learning environment are described in the title row of the same table. Demonstrating agreement with Werbach (Werbach, Hunter 2012), Kocadere (Arkün Kocadere et al 2018) shows that in game learning environments there may be one or more elements that trigger each mechanic (Table 1).

Table 1. Mechanics and the elements used to trigger them
according to (Arkün Kocadere et al. 2018)

Element/ Mechanic	Leaderb.	Point	Content Unlock. & Level	Badge	Achiev.	Gifting	Team	Story
Narrative								X
Competition	X	X	X					
Status	X		X	X				
Progression		X	X		X			
Resource Acq					X			
Reward				X	X			
Cooperation							X	
Transaction						X		

But Kocadere and Özhan don't stop there. They graphically represent the mechanics and elements with a positive impact on different types of players, as shown in Figure 2.

The mechanics are placed on the coordinate plane of Bartle (Bartle 1996) and occupy the inner circle, and the corresponding elements are shaped as a second, outer ring. The elements that activate the different types of players are represented in the coordinate plane by arcs. It is noteworthy that the arcs of some of the player types exit their original quadrants and expand in different directions than originally defined by Bartle (Bartle 1996). Figure 2 shows that the arcs of the Achiever, the Explorer, and the Socializer cover elements in other quadrants, while the "most aggressive" Killer remains within his original quadrant.
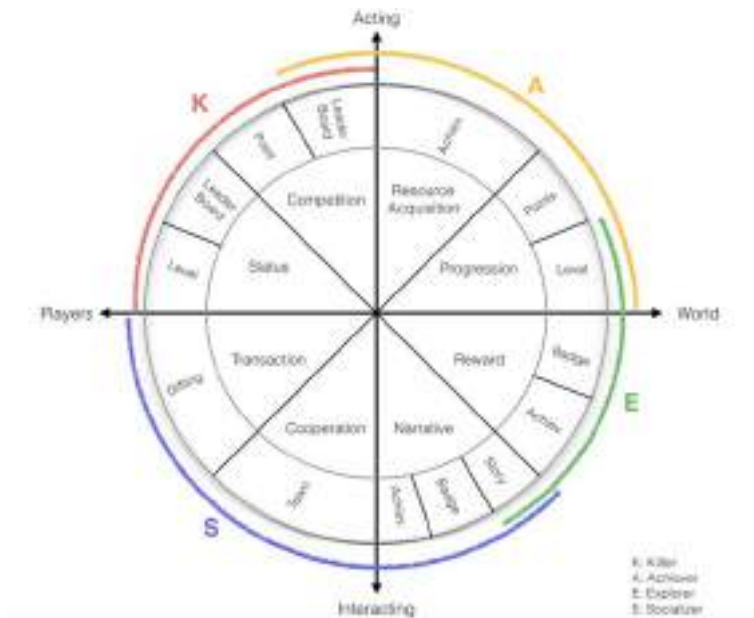

Figure 2. Elements and mechanics that enable different types of players, depending on the environment (Arkün Kocadere et al. 2018)

In the study of (Arkün Kocadere et al 2018), these variations are explained by the way in which the game elements were implemented in the educational environment and by its gamified reaction. The results of the study come as confirmation of Bartle's claim in (Bartle 2005) that individuals have core types, but may also display characteristics of different types of players, depending on the characteristics of the environment and circumstances.

5. Ferro, Waltz and Gröter types of players

In (Ferro et al 2013) are presented five different types of players, adding the creative type to Bartle's picture. In Table 2, they systematize the interpretations of 15 different authors regarding the types of players, their personality characteristics, and the game elements and mechanics appropriate in a gamified learning environment. At the time of publication, the model is stated to be purely theoretical and subject to refinement, and that the concept of player types is largely built on personality traits that are dynamic depending on context and environment. Here is part of the classification of (Ferro et al. 2013).

Table 2. Adapted version of the table proposed in (Ferro et al. 2013) for identifying the type of player, his personality traits and the mechanics and game elements suitable for him

Player Type	Personality	Game Elements	Mechanics
KILLER (B) Contestant (F) The Power Gamer (L)	Dominant; (K) Aggressive; Low sensitivity (K)	Challenge; Conflict; (F)	Bars reflecting progress and experience; Leaderboards; Points
SUCCESSFUL (B) Achiever (F), (X)	Introverted and conscientious; (Yu) High intelligence and perfectionism (K)	Boundaries; Objectives; Challenge; Prerequisite (F)	Badges; Bonuses; Levels; Progress bars
SOCIALIZER (B) Funny (F) Narrator (F)	With high emotional stability and social confidence; (K) With a low level of anxiety (K)	History/Narrative; Players; Prerequisite (F)	Personalization; Missions
EXPLORER (B) Seeker (X) Survivor (X)	With low social confidence; With high open-mindedness and independence (K)	History/Narrative; World; Building; Boundaries (F)	Missions; Awards schedule
CRAFTSMAN (F) Creator (Fr) Independent (Fr)	Creative personality suitable for composer, architect, inventor (MB)	World; Building; Boundaries (F)	Inventory; Personalization; Missions
LEGEND (B) Bartle (F) Fullerton (L) Lowes (X) Hex (Fr) Fritz	(Yu) Jung (K) Cartel (MB) Meyer-Briggs		

6. Upgraded hexagon type of Marczewski

In (Marczewski 2015a) are classified the types of users of gamified systems according to the levels of intrinsic and extrinsic motivation they have when interacting with them (the green hexagon in Figure 3). He uses ideas from Self-Determination Theory and creates his model (the inner part of the red hexagon) by describing four types of intrinsically motivated consumers: Socializer, Free Spirit, Achiever and Philanthropist.

It also offers a fifth type, this time an extrinsically motivated Player type that only exists here. Later he added a sixth type – Destroyer.

In Marczewski's popular hexagonal model, Socializers, Achievers, Destroyers, and Free Spirits behave in a manner similar to Bartle's types. Here, Philanthropists are a group of altruists who want to enrich the lives of others without expecting a reward, and Players are motivated by extrinsic rewards and will always do what it takes to make them their own. In (Marczewski 2015b), Marczewski further develops and enriches his model by adding game mechanics and elements suitable for the types of players described above. Thus, the structure presented in Figure 3. becomes an effective proposal for gamification of the classroom.
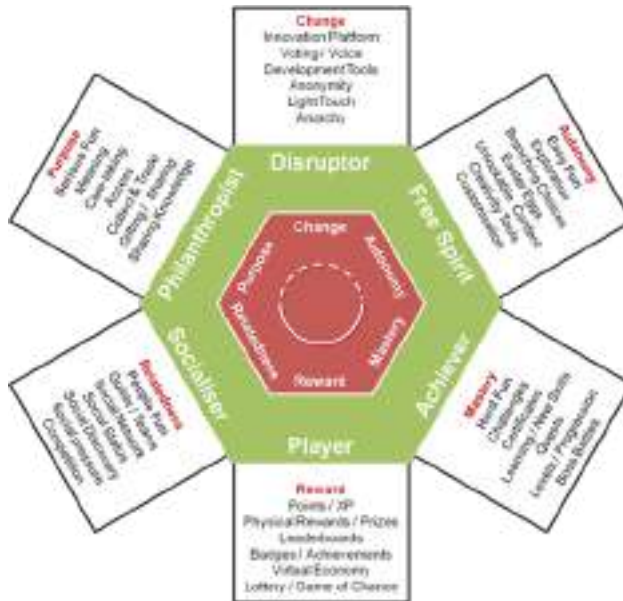

Figure 3. Marchevsky's extended hexagonal type

To demonstrate the relationships between the game elements identified in the literature and the HEXAD gamification user type, Andrias (Andrias 2019) created

Table 3. According to them, it can help any gamification designer to develop a gamified application that suits the mechanics and the game elements to the respective type of user. And when a teacher starts trying to gamify their classes, he become just that.

Table 3. User types, game mechanics and game elements mapping

MEHANICS	ELEMENT	Free Sp.	Achiev.	Philanthr.	Players	Disrupt.	Social.
Reward	Badge	X	X	X	X	X	
	Achievement	X					
Narrative	Achievement						X
	Story	X					X
	Badge						X
Competition	Leaderboard		X			X	
	Points					X	
Progression	Points	X	X	X			
	Level	X	X	X			
Status	Leaderboard		X		X	X	
	Points	X	X		X	X	

7. Proposed model

Based on the reviewed sources, we created our own model for surveying the students, with which they can be easily and quickly determined as types of players (Table 4). We currently cover Bartle's four player types, and our ambition over time is for the model to cover a larger number of types with more refined questions and feedback assessment methods. Subsequently, we plan to add sets of appropriate combinations of game elements and mechanics to ensure the positive effect of the gamified classroom.

For each type, we offer three questions, the possibly positive or affirmative answers of which will bring him closer to the sought-after sample.

Table 4. A basic model for surveying students, with which they can easily and quickly be defined as player types

Player Type	Questions/Answers	Yes, definit.	Rather Yes	Rather No	Firmly No
KILLER	1. The price does not matter, the important thing is to be a winner	40%	30%	5%	- 25%
	2. The failure of others feeds your victory	40%	30%	5%	- 25%
	3. Only competition matters	40%	30%	5%	- 25%

EXPLORER	4. Discovery moves the world forward	40%	30%	5%	- 25%
	5. It's great to share your discovery and get recognition	40%	30%	5%	- 25%
	6. Search, find, experience	40%	30%	5%	- 25%
SOCIALIZER	7. Social contacts are most important	40%	30%	5%	- 25%
	8. Communication is the best way to realize yourself	40%	30%	5%	- 25%
	9. The more friends you have, the better	40%	30%	5%	- 25%
ACHIEVER	10. Meaning is in the next level	40%	30%	5%	- 25%
	11. The more points the better	40%	30%	5%	- 25%
	12. Rankings are important	40%	30%	5%	- 25%

The answers are weighted differently, with the final sum of the percentages of the respective answers determining which type of player the student approaches. For example, if student X answered questions numbered 4,5 and 6 in the following different ways, he is definitely an Explorer (Table 5). The minimum amount that guarantees belonging to a specific group of players is 90%.

In our opinion, defining the different types should not set sharp and concrete boundaries, so we define "Hesitant type of player (in this case Explorer) based on an evasive negative answer". These are the cases where the corresponding percentages are 85% (40%+40%+5%), 75% (40%+30%+5%) and 65% (30%+30%+5%).

If the teacher decides, he can accept as an Explorer the student who answered with a score of 85%. For other cases, he will need an additional criterion and it may be the student's temperament, his attitude to the learning process or additional guiding questions. The criteria can also be the same when there are students who score equally for different types of players or have too low scores and they cannot be clearly assigned to any type.

Table 5. Possible answer options when surveying students to determine their types as players

Case 1

Player Type	Questions/Answers	Yes, definitely	Rather Yes	Rather No	Firmly No
EXPLORER	4.	40%	30%	5%	25%
	5.	40%	30%	5%	25%
	6.	40%	30%	5%	25%

Case 2

Player Type	Questions/Answers	Yes, definitely	Rather Yes	Rather No	Firmly No
EXPLORER	4.	40%	30%	5%	25%
	5.	40%	30%	5%	25%
	6.	40%	30%	5%	25%

Case 3

Player Type	Questions/Answers	Yes, definitely	Rather Yes	Rather No	Firmly No
EXPLORER	4.	40%	30%	5%	25%
	5.	40%	30%	5%	25%
	6.	40%	30%	5%	25%

Case 4

Player Type	Questions/Answers	Yes, definitely	Rather Yes	Rather No	Firmly No
EXPLORER	4.	40%	30%	5%	25%
	5.	40%	30%	5%	25%
	6.	40%	30%	5%	25%

8. Conclusion

Different players may manifest as one type or another depending on the environment, what motivational type they are, or what their learning style is. They are able to demonstrate traits that are not inherent to them depending on the characteristics of the gamified learning environment.

The mechanics that engage learners in the gamified classroom differ depending on the type of player and their influences on the subject being studied, the reactions of their classmates, etc. The items that trigger it are also affected by player type, with one item serving different mechanics.

The teacher is the designer of his successfully gamified lesson, but only on the condition that he has prepared in advance - he knows his students and those game elements that will turn them into motivated learners.

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