
Playability Heuristic Set Comparative Study: Support Material for CustomCheck4Play

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Playability Heuristic Set Comparative Study: Support Material for CustomCheck4Play

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ABSTRACT

Playability evaluations have the purpose of finding interactions and design issues in games throughout development as well as with final products and published games. Literature have developed several methods and heuristic sets to evaluate this games in a general matter. However, as new heuristic sets and methods are proposed, old and new solutions are not comparatively evaluated in order to identify improvements and good aspects of these solutions. This technical report presents two playability heuristic sets that were used on a comparative empirical study between them in order to access which of them is more efficient and effective on identifying playability issues in games. Moreover, a short description of objectives of each heuristic set is provided as well as explaining their construction. The produced empirical evaluation also had the objective of identifying improvements between evaluated sets and aspects that can support the development of better solutions for game playability evaluations.

1. BARCELO'S HEURISTIC SET [1]

Barcelos et al. [1] have proposed that large playability heuristic sets negatively impacts the playability evaluation as evaluators can't remember past heuristics or correctly evaluate future ones. Their assumption lead to the development of a short heuristic set containing 18 playability heuristics that are intended to evaluate different and broad game genres and types. Their approach was to evaluate existing literature heuristic sets as to produce a list of concurrent heuristics between different sets. This way, Barcelos's set contains heuristics that different authors have used in their own sets throughout research years on playability evaluations.

Also, because of the development process of it, their set contains heuristics from different evaluations points of view. For example, there are heuristics concerning playability issues on design, mechanics and gameplay, as also there is heuristics that concern about usability issues that can be identified on general games, and heuristics that concern about specific player experience issues or specific game scenarios.

In order to validate their heuristic set, authors have developed a comparative empirical evaluation of their set in comparison to the heuristic set proposed by Desurvire et al. [3]. In their evaluation process, authors have used two different games with the same genre and with similar types and background story. Results from the empirical study have shown no significant difference between both heuristic sets, this way, no statistical assumption was made about their improvement in relation to the heuristic set proposed by Desurvire et al. [3].

In the other hand, authors have also developed a qualitative analyses of both heuristic sets so that they could identify improvements and deferent aspects between sets. In the qualitative analyses, evaluators have indicated that the set proposed by Barcelos et al. [1] was easy to understand and use, as well as that it was easy to remember different heuristics from the set in a way that they were able to go back and forward on the evaluation process. In comparison, evaluators that used the heuristic set proposed by Desurvire et al. [3] indicated that they had difficulties on locating different heuristics and that the set was too large to remember specific heuristics from it. Moreover, as the set proposed by Desurvire et al. [3] is too broad, some heuristics were not used because they does not reflect on the evaluated game aspects.

With this evaluation, authors understand that the set proposed by them could be a viable solution for the evaluation of playability in simple, general and different games in short sprints. Also, evaluating qualitatively the set, authors indicated that the set could be a viable substitute in short game evaluations during development phases as, with a shorted set, evaluations could be less time consuming.

2.1 Heuristic Set

In TABLE 1, the complete heuristic set proposed by Barcelos et al. [1] is available. A particularity of this heuristic set is that it does not have heuristics categorization as literature usually describes. This particular aspects have not improved or made significant difference throughout the evaluation process.

TABLE 1. HEURISTIC SET PROPOSED BY BARCELOS ET AL. [1]

N°	Heuristics
H1	Controls should be clear, customizable and physically comfortable; Their response actions must be immediate.
H2	The player must be able to customize the audio and video of the game according to his/her needs.
H3	The player must be able to easily obtain information about everything in the surroundings.
H4	The game should allow the player to develop skills that will be needed in the future.
H5	The player must find a tutorial and familiarization with the game.
H6	The player must easily understand all visual representations.
H7	The player must be able to save the current state to resume the game later.
H8	Layouts and menus should be intuitive and organized so that the player can keep his focus on the game.
H9	The story must be rich and engaging, creating a bond with the player and his universe.
H10	The graphics and soundtrack should arouse the player's interest.
H11	Digital actors and the game world should look realistic and consistent.
H12	The main objective of the game must be presented to the player from the beginning.
H13	The game should propose secondary and smaller goals, parallel to the main objective.

N°	Heuristics
H14	The game must have several challenges and allow different strategies.
H15	The pace of play should take into account fatigue and maintenance of attention levels.
H16	The challenge of the game can be adjusted according to the ability of the player.
H17	The player must be rewarded for his achievements clearly and immediately.
H18	The artificial intelligence must represent unexpected challenges and surprises for the player.

2. CUSTOMCHECK4PLAY EVALUATION TECHNIQUE

Different authors have proposed different heuristic sets for the evaluation of playability [1][2][3][4][5][6][7], however this heuristic sets have general purposes as to evaluate a broad and different types of games. This way heuristic sets become too large and have heuristics concerning too many different aspects of different genres. With large sets evaluators can't memorize past heuristics and when they try to search for a specific heuristic, is too difficult to locate it, even when the set is correctly categorized[3][5]. Also, larger sets are more time consuming and generally can't be used by any type of evaluator with different levels of evaluation expertise.

Moreover, this type of heuristic set goes against game development industry, where budget and time are the most valuable resource [9]. Large sets are time consuming, and sets that are developed only for expert analyses are costly to apply, as there is a shortage of playability evaluation experts. In addition to this, game development industry usually have one or two games being developed at a time, this way, broad sets have heuristics that evaluate different aspects than what is needed in that specific scenario. In an attempt to develop a heuristic set that can respect these game industry constraints, CustomCheck4Play was proposed.

CustomCheck4Play is a configurable heuristic set that can adapt itself to evaluate specific game genres according to the game that needs to be evaluated [8][10]. Furthermore, CustomCheck4Play is intended to be applied by any type of evaluator with any level of knowledge and expertise in games or in heuristic evaluations.

3.1 Heuristic Categories

As CustomCheck4Play is intended to be customized accordingly to the genre of the evaluated game, heuristics categories are based on a general conjunct of game sections that are common for every game genre. This categorization was developed as an intension to easily be able to customize the heuristic set in accordance with the evaluated game genre. This is made by excluding certain categories in accordance to the game genre, if the game does not present that specific game aspect defined by the category, the category will be ruled out of the evaluation. This customization process is made through a questionnaire that takes into account different questions about the evaluated game and, at the end suggests the correct custom heuristic set to use on the evaluation process. TABLE 2 presents all heuristic categories developed for CustomCheck4Play and a brief definition of the category in terms of the game section and genres that are compatible with that category.

TABLE 2. GAME SECTIONS CATEGORIES FOR CUSTOMCHECK4PLAY HEURISTICS.

Nº	Game Main Sections	Definition of the Game Section
1	Introduction	Every game has an initial motivation to carry out activities and history, its here where the main objective will usually be presented to the player and the initial tutorial will also take place, presenting the most basic mechanics of the game as: movements, vision and menus / screen information / player status.
2	Character Presentation	Generally connected directly with the initial presentation of the story, the most important characters that will accompany us during the story are presented. In addition, if the game focus in a single main character, we will have the customization of our character that we will control and use throughout the story.
3	Gameplay Introduction	Right after the initial story of the game, it is normal to have a first phase/obstacle to be presented to all the mechanics of the game. It's here where we can have our first interaction with the controls of the game. Also, from here we will begin to realize if we have all the information we want and need to continue playing, such as scores, life, ammunition and everything else on the screen.
4	Gameplay Development	Throughout the game, several activities must be performed and goals to be achieved, at this point we will have to evaluate if the game can hold our attention by modifying the ways we have to achieve these goals. Moreover, it is here that we can evaluate if the game can adapt to our knowledge, presenting new challenges and obstacles.
5	Storytelling	Each time we reach a secondary or main goal, a new part of the story will be presented to the player in order to create a chronological order that can be modified by the players' actions.
6	Gameplay Evolution	The further we advance in the story, the more the game must evolve to include new obstacles and new challenges, such as new enemies or puzzles.
7	Game Pause	Games must provide means for players to be able to stop the gameplay and resume them later.
8	Context Helps and Error Recovery	At various times some players may find themselves trapped because they don't know what to do with an information/path, etc. At these times, the game should be able to present helps for the player.
9	Difficulty and Progressive Levels	Games need different levels of difficulty since different players, with different abilities, can play it. In addition, the game must know how to progress or regress the difficulty according to the time played.
10	Configurability and Menus	Games must have means to modify certain game settings according to each situation.

3.2 Heuristic Set

In TABLE 3 bellow, all 35 heuristics from the complete CustomCheck4Play Heuristic Set are available. The set is presented with all the divisions in categories. Some heuristics on CustomCheck4Play have ‘*support sentences*’ that better explain what a specific heuristic wants to evaluate in the game.

TABLE 3. CUSTOMCHECK4PLAY HEURISTIC SET.

N°	Heuristics
Introduction	
H1	The game features an initial storyline that justifies the player's actions with a primary goal.
H2	The game should present a tutorial to familiarize the player with mechanics and gameplay.
H3	Terminologies used for all objects/functions are understood by players.
Character Presentation	
H4	It is possible to customize the main character in order to create a unique identity from it.
H5	The main character can have a personality and characteristics that holds our attention believing that it is real.
H6	Game characters create a personal relationship with the player characterizing them as real individuals.
Gameplay Introduction	
H7	All symbols, buttons, and game icons should be easily understood by players.
H8	The player can easily obtain information about the current state of the game such as scores, life and remaining ammunition in a simple way.
H9	Controls should be simple so that learning is fast.
Gameplay Development	
H10	The game presents feedback to the player appropriately.
	Support Sentence: That is, the game makes correct use of songs / sound effects / control vibrations / visual warnings when necessary to the player as well as has a pattern being followed for these actions.
H11	Developed activities throughout the game are varied so as to decrease fatigue.
H12	The skills needed to achieve a current or future goal are known and taught.
H13	The game is balanced in order to apply pressure on the player without frustrating him.
	Support Sentence: That is, challenges are positive experiences for the player and keeps him interested.
Storytelling	
H14	You can achieve a primary goal in a variety of ways, and there are secondary and optional goals.
	Support Sentence: The game features a number of secondary and optional objectives which complement one or more main objectives.
H15	It is possible to understand the chronology of the story in an almost natural way and the actions of the player interfering in it.
H16	The game features an immersive story that catches the player's attention.
Gameplay Evolution	
H17	The player notices changes in the game world through his actions and progress.

N°	Heuristics
H18	Controls must be clear and physically comfortable, and their response actions be immediate.
H19	The player must not lose any obtained object through great effort.
H20	Enemies pose unexpected challenges and surprises to the independent player of the selected level.
H21	Players can learn how not to make same mistakes in similar activities. Support Sentence: The game does not immediately penalize the first few mistakes giving the player the opportunity to learn from these mistakes.
H22	The player can have fun with the game.
H23	Game graphics are satisfactory/attractive. Support Sentences: Even if done in a simple way, graphics should be attractively presented to players.
H24	The game design is attractive enough to keep the player's attention. Support Sentence: The design of the game does not cause fatigue in the player.
Game Pauses	
H25	The player must be able to stop the current match at any time easily. Support Sentence: That is, interruptions are expected and planned.
H26	You can save the current state of the game to resume later from the same saved point.
H27	Every time the player starts/resumes/continues the game, he or she has enough information to start playing. Support Sentence: There is no need to consult manuals, documentation or tutorials constantly to continue playing.
Contextual Tips and Error Recovery	
H28	Players must receive context help during phases so that they are not stuck in it.
H29	Context help should not make the phases too easy so that there are no challenges to the player.
H30	The game must be able to avoid unintentional errors of the players. Support Sentence: For example, do not allow the player to lose their game save slot when they accidentally hit the wrong button.
Difficulty and Progressive Levels	
H31	The challenge of the game can be adjusted according to the skills of the players.
H32	Game difficulty is gradual and accompanies the development of the player. Support Sentences: The game follows the difficulty chosen by the player, however, it adjusts throughout the phases, the more phases it can pass, the more difficult and challenging the game becomes.
Configurability and Menus	
H33	Layouts and menus should be intuitive and organized so that the player can stay focused on the game.
H34	The game should allow customization of settings and controls.
H35	Controls should be expandable for more skillful players.

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