Supporting the game construction process: development of artefacts in the context of a Toolkit to Game Design

Pedro Beça[1], Rita Santos[1], Ana Veloso[1], Gonçalo Gomes[1], Mariana Pereira[1] and Mónica Aresta[1]

[1] DigiMedia, Departamento de Comunicação e Arte
Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro

Abstract. The Gamers4Nature project aims to deliver a set of strategies to empower and encourage youngsters (upper-secondary and undergraduate students) to actively participate in games creation while raising knowledge about environmental preservation and biodiversity conservation. To accomplish these goals, a Toolkit to Game Design is being created, containing a set of resources and tools aiming to help in the creation of mobile digital games, namely a Game Construction Cards Set. This paper presents the creation process of the project's general identity and its concept adaptation to the Game Construction Cards Set, which required a deep understanding of the target audience and the development of a strategy to engage the participants in its activities. A general identity was defined, where a specific "language" to reach this audience was designed and a brand to support it was created. This "language" was applied in all graphic materials developed since day one, namely to the Game Construction Cards Set – focus of this paper. The validation of the prototypes was made through focus groups, using an iterative design approach. The focus groups participants' inputs were integrated in the design and helped with the graphic elements' evolution, allowing the project to maintain a coherent strategy in all its representations that exceeds its graphic language and a deeper identification with the developed artefacts.

Keywords: Toolkit to Game Design, Gamers4Nature, Dynamic Brand, Graphic Identity, Iterative Design

1   Introduction

When designing a brand for a younger audience, it not only is important to have a well-thought brand (symbols, typography, colours…) but also to give a new experience of connection to the user. Brand communities, specialized in the consumer, diverge from traditional communities due to their commercial character, and its members shared interest in and enthusiasm for a brand. These are communities that contain common markers: consciousness of kind, shared ritual and moral responsibility [1].

Aiming to be a place of comfort first and foremost [2], a brand community is one of the tools used in relationship marketing to, as the name implies, create and maintain long relationships with consumers [3]. Research in the marketing and branding

consider consumer loyalty as one of the core indicators of success of marketing and branding strategy pointing out that brand is a cluster of emotional values [4] and emphasizing that brand values should be seen from the perspective of consumers [5].

In this scenario, the Gamers4Nature project intents to design and implement strategies able to encourage the active participation of youngsters in mobile game creation while raising knowledge about biodiversity conservation and environmental preservation.

To achieve this goal, a Toolkit to Game Design is being developed featuring a set of resources and tools designed to help in the creation of mobile digital games, namely a Game Construction Cards Set (GCCS) and educational resources on environmental preservation.

This paper presents the creation process of the general identity and its' concept adaptation to the GCCS. It is structured in five sections as follows: Gamers4Nature: Defining the Project's Identity, where concerns and decisions about the brand's identity are described; Game Construction Cards Set, where the process of creating and validating the cards is presented; Next Stage: The Educational Resources Card Set, where it is shown how the brand's identity is applied to other resources; and finally, the Conclusions.

2 Gamers4Nature: Defining the Project's Identity

The Gamers4Nature project aims to design and implement strategies able to encourage the active participation of young public (upper-secondary and undergraduate students) in mobile game creation, as a way to promote knowledge about environmental conservation and behaviour change towards nature. To answer to the project's brand identity briefing, it was extremely important to analyse the target audience and its expected behaviour while dealing with technologies within the near future. Several ideas emerged when designing this identity:

- the sense of community - game communities are extremely important and popular, and therefore the brand should evoke it;
- the brand's personality, as the brand should be dynamic and personal to the audience;
- the brand's ability to trigger user engagement.

During the creative process that supported the Gamers4Nature's brand, the following concepts were taken into consideration; *Brand Love* - the level of emotional and impassioned affection that a pleased consumer has with a particular brand [6]; *Brand Loyalty* - defined as the repeated support for a brand over the time [7]; *Word of Mouth* (WOM) - talking about a product and/or service between people apart from advertisement [8]; and *Brand Advocacy* - promotion or defense of an organization/product/brand by one consumer to another. This last concept, as it is seen as less informal and more protective, differs from WOM.

With the desire and intention to create a community in mind, it was essential to look at the brand identity and think about what type of approach would be more effective. During the review of the state-of-the art done through this project, the concept of Dynamic Identities emerged. Dynamic Identities, or living brands [9], are considered

to be (in its basic sense) brands with energy able to transmit and reveal change, movement, and flexibility, reflected in their dynamism. A Dynamic Brand is considered to be an evolution, the next step of a Visual Identity, and can be extremely appealing for the openness, interactivity and broad innovation. One other important aspect of Dynamic Brands is the significance it has as a marketing strategy and branding [10].

The logo and brand were designed with all these ideas in mind. For the typography in Gamers4Nature, it was important to find a neutral font with all characters and symbols (e.g. "ç", "~") since the approach was to present a logo whose letters would change regularly, as is seen in coding (Fig. 1). It was chosen Heebo font as the logo font, and some characters were adapted.

G4N*
GAMERS4NATURE*
GAMERS4NATURE
GAMERS4NAT00R3
GAM3R$4NATURE(

Fig. 1. The project's logo.

This approach – to develop a logo able to be transformed by users – reflects the nowadays participatory culture [11] by allowing the involvement of users in the identity process, as they are able to "build their own brand", by combining letters, numbers, and signs that reconfigure the Gamers4Nature lettering.

The personal appropriation of the brand is a key element in brand community building, and it contains common markers: consciousness of kind, shared ritual and moral responsibility [1].

3 Game Construction Cards Set

To frame the conceptual framework of this project, an exploratory literature review on the concept of games was conducted. Game emerges from the relation between the output of the game design development and the user's experience while playing the game. Amongst other perspectives, games are introduced as structures evolving around its formal system, the relation between the player and the game and the relation between the game and the rest of the world [12]; a relation between the player's experience and the interaction with the games' rules [13]; and as a formal systems made of formal and dramatic elements, system that engage players in a regulated conflict [14].

Being one of the project's goals to assist young students (upper-secondary and undergraduate) in the creation of mobile digital games, Fullerton's [14] approach to game design was considered as being the most suitable, as it includes an extensive description of nineteen game elements (e.g. rules, goals, character, story) and the connection between them. It was expected that taking this approach into the development of artefacts able to transmit information about the game elements (the GCCS) would ease the game creation process and engage users in the creation of games. The challenge: Efficacy and Engagement

As mentioned before, the brand's concept and the idea to create a brand able to be reused, redesigned and appropriated by its users should be present along the Gamers4Nature's project, namely in its artefacts and interfaces (both physical and digital). All resources would be included in the online platform but also able to be explored as a physical format – a physical artefact. This way, it would be possible to use the artefact in game design sessions (e.g. Game Jams), where participants would be able to interact with the physical objects and the information comprised in it.

There was, therefore, the need to question how to create a flow between these two supports. What would be the proper approach to both? How to transmit, in a physical artefact, the feeling of gaming and the non-linearity of gaming activities and give users the change to explore several paths and approaches while creating their own games?

As stated by Thomas C. Hale [15], a regular hexagonal grid (honeycombs) is the best way to divide a surface into regions of equal area with the least total perimeter. Hexagonal shapes are perfect for the aggregation of different elements or to simply branch out a map of the different ideas. Taking this into consideration, a set of hexagonal pieces and a honeycomb-based board were created, as a first way to validate and explore the project's conceptual framework.

3.1 Methodology

Iterative design is a process based in cycles of conceptualization, prototyping, testing and evaluation. It is an adaptive process in which designers and developers engage in cycles of defining an idea, developing a prototype that reflects that idea, test the prototype with a target-audience to see the idea in action, and then evaluate the results and make the necessary adjustments [16]. This approach, while leaving room for error, it also allows for the emergence of new viewpoints able to improve the original idea. The validation of the project's artefacts prototypes were made taking an iterative design approach, through interviews and focus groups made with experts and postgraduate students with expertise in game development. Focus groups are group interviews organized to promote the discussion about a specific subject. While guided by a moderator, these sessions allow for the discussion and interaction between participants and their perspectives, being adopted in the game design field as a way to evaluate and understand game play experiences [17] [18]. Focus groups were therefore considered to be the best approach to collect several participants' opinions about games, game design, game elements and the interaction between them.

3.2 Stage 1: Cards Set First's Artefacts

Honeycomb board. The board given to evaluators to explore the cardboard pieces with the game elements name (19 pieces, one representing each game element) was designed with printed hexagonal shapes and had the A3 size. The hexagonal forms give the aspect of communities as it remembers the honeycombs and honeybees' communities. It was essential to develop and provide the board to instigate the user to make configurations with the cardboard pieces to connect them and so the Focus Group moderator didn't have to intervene so much. There were three elements present on the board: the honeycomb-like shape for the cardboard pieces; an area for participants to name the type of game they were thinking while exploring the cardboard pieces; and the project's description, with the base logo below (Fig. 2).
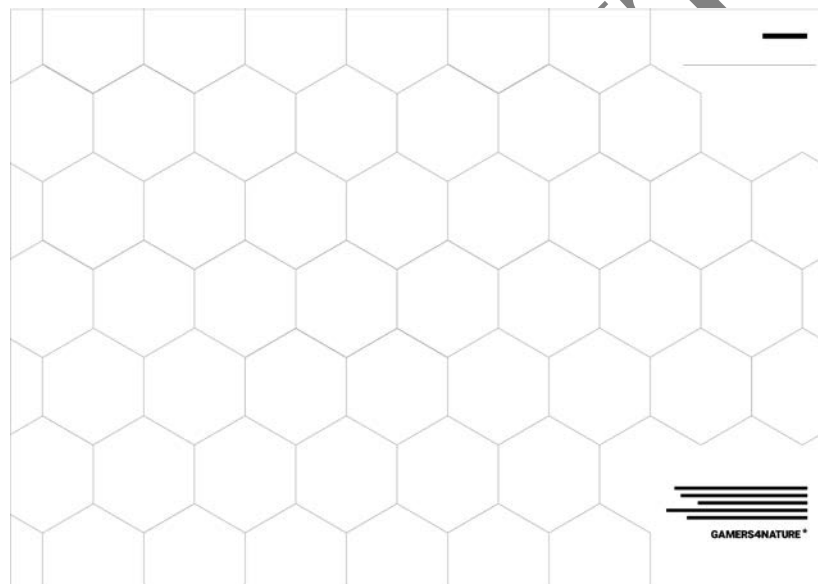

Fig. 2. The honeycomb board

Cardboard pieces. The cardboard pieces were created with the same purpose of the board: to allow for an ease connection between elements. The hexagonal shape (3 cm side) seems to be the best approach for the group's aggregation of the cardboard pieces or organize a simple branch out a map with different ideas in each cardboard pieces. Six sets were printed, each one with a different colour – so it could be easier to separate or connect the sets, if needed. The used colours were a representation of the brand's Visual Identity, turning the validation cycle also into an exercise on how to communicate the brand (Fig. 3).
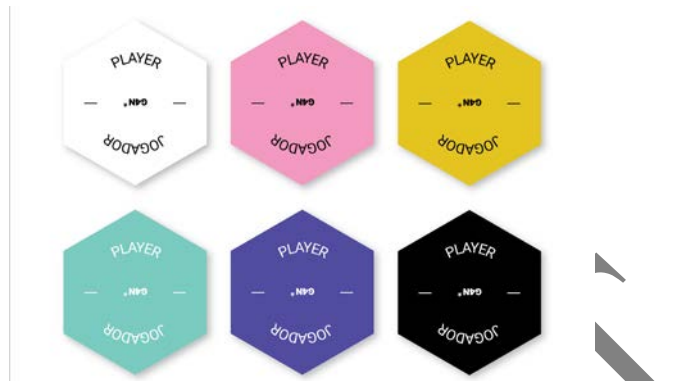
Fig. 3. The cardboard pieces.

Discussion: Three Game design researchers and one game developer were invited to use the cardboard pieces (Fig. 4) while talking about games and the game development process (during individual interviews), as well as nine postgraduate students (during two focus groups). Among the nine ICT (Information and Communication Technologies) postgraduate students, six had moderately high or high level of experience in game programming and development; six had some or average experience in constructing game stories and narratives; and five had some or average experience in game art and animation. One participant had no experience in game art and animation, and one had no experience in stories and narratives.

Fig. 4. Participant using the honeycomb board and cardboard pieces.

It was stated by all participants that both the board and the cardboard pieces were a valuable artefact in the exploration of game design concepts. It allowed for different ways to group the elements, to expand initial perspectives and to articulate different ideas. Nevertheless, it was clear that – in order to be used by a younger and less expert audience – the pieces would need to accommodate more information and therefore be redesigned. During the focus group's analysis process, it became evident that there was a need to develop a new way to introduce the element's information: although the hexagons and the honeycomb board had served its goals – to trigger the discussion and to explore the game elements concepts, namely the ones considered as "core-elements" – a larger (dimensions) artefact was needed, so they could accommodate more information about each game element and thus be used, during game creation sessions, by the project's target-audience (upper secondary and undergraduate students).

3.3   Stage 2: First version of the Game Construction Cards Set

While the hexagonal cardboard pieces allowed for the exploration and discussion of each game element in the first stage, there was a need to develop a solution able to be used by the audience in game design sessions such as Game Jams. This new artefact should be manageable, able to be used by one or several users at the same time and contain the information addressing the different game elements and its importance to the game design process.

Considering the target audience, it became clear the need to add more information about each element. To do so, the size and format of the cards changed to a somewhat close standard size of 7,14 x 10 cm. The format of the card stayed with a hexagonal form as an evolutive element of the previous stage. With this format, the connective element between cards was lost, however it wasn't a key element of the cards at this point. The expansion of the cards gave us space to explain the game element's concepts that can be slightly difficult to understand by the target audience. Although this change implied that the honeycomb tray would have to be redesigned or just removed, this change opened doors for space to create a more playful design.

In the front part of the card, the only elements present were the logo, the number of the card (for easy identification of the cards), the concept name and a brief description. The back part had a small contextualization about the game element and a few examples of its presence in games were presented.

As in the previous stage, there were six sets of cards, each one with a different colour for the same exact reason, to easily separate or connect the sets. For the typography element, it was decided to continue with Heebo only for the text body. Instead of using the same font in the card's element, it was decided to experiment with more playful fonts to make the cards less monotonous and dull. After several readability tests, the font Agrandir Tight Heavy was selected. This font is a contemporary serifless type that claims to celebrate the beauty of being imperfect. Agrandir is especially interesting for the extremely unusual characters like the "ç" and "Q" that give the cards a youthful look. The first version of the GCCS is presented in Fig. 5.

Fig. 5. The Game Construction Cards Set (cycle 1)

Discussion: End-users (the target audience, upper secondary and undergraduate students) were invited to evaluate the new Game Construction Cards Set prototype. This process of validation was made through four focus groups: two with target-group A (upper secondary students) and two with target-group B (undergraduate students). Students of target-group A were upper secondary students attending an ICT (Information and Communication Technologies) course, 11 students divided in two groups, 10 male one female, aged between 15-17 (average: 16), with no previous experience in game creation activities. Students of target-group B were undergraduate students also attending an ICT course, eight students divided in two groups; six males, 2 females, aged between 19-25 (average: 21), four had previous experience with game creation activities.

Invited to analyse each card of the GCCS, they validated not only the information present in each card but also some design aspects: layout, text size and distribution, text's typography and the legibility of text over each colour. As the validation process focused on these aspects, and participants were not required to explore the relations between the game elements, the honeycomb tray was not introduced to participants.

The feedback about the size of the cards, size of the text and layout was positive, but participants mentioned that increasing the font size would help in the reading process. Moreover, the analysis of the participants' opinion also revealed that, while addressing the cards, participants adopted similar expressions (e.g. for the player card, they defined player as "the one who plays the game") - this suggested that, instead of using just the name of the element as the main focus of the card, the use of the sentences most used by participants would establish a natural connection between the game element's name and the card's content. In order to help the user's thought process, the sentences where presented as trigger expression/questions. This led to edits

in the cards' layout, namely on its content, leading to a change in the front of the cards. This information was used for second cycle of the GCCS artefact development.

3.4   Stage 3: Redesigned Game Construction Cards Set

As in the previous stages, six sets of cards with different colours were developed. Each card addressed a game element, presenting in the front side the element's name, the trigger question and a brief description. In the back, the information was the same (with minor typo editions) showed in the previous cycle. As in this development cycle users would be challenged to create a game while using the cards, and in order to avoid any previous defined hierarchy or order, cards were no longer numbered (Fig. 6).

Fig. 6. The Game Construction Cards Set (cycle 2)

Discussion: End-users (the target audience, upper secondary and undergraduate students) were invited to evaluate the redesigned Game Construction Cards Set prototype. As in the previous cycle, this process of validation was made through focus groups: three with target-group A (upper secondary students) and seven with target-group B (undergraduate students).

Students of target-group A were the same students that participated in the previous development cycle (N=10). Students of target-group B were undergraduate students attending an ICT course, 23 students divided in seven groups, 10 male and 13 female, aged between 18 and 25 years old (average: 21). Only three participants had never engaged in game creation activities.

All groups were challenged to create a game using the toolkit cards, which was achieved by the end of the sessions. Questioned about the cards and in what way they could use them during a game creation session, participants mentioned that the questions present in the front of the cards were a good trigger. Asked to talk about the

cards' layout and information it comprised, they also mentioned the adequacy of its size, format, layout, font and text distribution.

4   Next Stage: The Educational Resources Card Set

With the first element of the Toolkit to Game Design – the GCCS – finished, requiring only minor adjustments (e.g. decisions about the material in which it will be printed), it was time to start working on another resource of the project, the educational resources to be used during the Game development sessions, focused on environmental preservation and biodiversity awareness. Following the "trigger question" approach taken in the second cycle of the GCCS, the topic approached in each card assumes the form of a question, along with and a small explanation of the concept (Fig. 7).

To tackle this content and to keep it in line with the GCCS, maintaining the brand's consistency, the card format needed to increase on its size: from 7,14 x 10 cm to 9,3 x 13 cm. As for the content for this card set, our first edition addresses micro plastics pollution problem. The graphic layout of the cards will not differ from the GCCS, but will have a new element: an illustration able to clarify and more easily address the concepts described in the texts. Illustrations will also be added to the back of the cards, along with a full explanation of the concept (Fig. 7).

The questions at the front of the cards will have the purpose of triggering the interest of the user. As the example below shows, the question "after all, what are micro plastics?" allows the common to identify himself with other users with no expertise in the subject being discussed, and therefore be more comfortable in exploring it.

This card set is still in its prototyping phase, and therefore no tests have been made at the time.

Fig. 7. Micro-plastics Cards Set

5   Conclusions

There are challenges when trying to communicate with younger audiences. However, there are design strategies that can help to guide and even change the perspective of a group. These strategies can begin with the visual identity of a product/service or how the brand presents itself to the world. Making a dynamic brand that does not rest on one fixed image and is personalized for the individual user was the project's solution. Also, by being flexible with the numbers of typographies that can be used, it acquired the freedom to play with layouts and find better solutions. The participants' inputs along the three stages helped with the graphic elements' evolution. It gave us the opportunity to find what type of physical form the Toolkit needed and how the contents could be shown. By using this methodology, the design process got less chaotic, simpler and quicker. For the next stage of the project, the Educational Resources Cards Set, it is intended to go through the same process as in the Game Construction Card Set . This process will make the Toolkit's evolution stronger and able to be used by students in the development of their own nature-related games.

6   Acknowledgments

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