Introducing Human-Centered Research to Game Design: Designing Game Concepts for and with Senior Citizens

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Abstract
This paper introduces a human-centered methodology for innovating gameplay, based on ethnographic principles and participatory design. This methodology was applied in a project for designing game concepts for and with senior citizens. The research started off by observing and probing senior citizens in their ‘natural habitat’, researching what positive experiences occur in their daily life. These observed passions then became the input for brainstorm sessions. Seniors and researchers generated game-ideas and, consequently, co-designed the selected ideas into game concepts. The results of this methodology are inspiring game concepts, directly grafted on the passions and desires of the senior. But more important than the actual game concepts, we conceived a model of passions in elderly life. This model provides game designers with an understanding of the ingredients that are fundamental to ‘meaningful play’ in elderly life.

ACM Classification Keywords
H.5.2 User Interfaces --- User-Centered Design

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Ethnography, human-centered design, participatory design, game design, elderly, senior citizens
Do we need player-centered game design?
Although rigorous project management is an essential part of game development, as for game design, it seems that games are often regarded as ‘art’. A strong responsibility is given to the game designer, whose status equals the one of an artist or movie director [7]. Game designers prefer the tap into their (self-perceived) unlimited creativity and come up with their own ideas [5,13,16], referred to as the I-methodology [12]. This self-centered design process often results in hard-core gamers designing for hard-core gamers, or to put it in other words: ‘boys’ designing for ‘boys’ [8]. As the game sector is looking to gain maturity and a larger target group [15,18] there is a clear need for a more inclusive, more mature approach. However, combining the I-methodology with the fact that the game industry is mainly populated by male designers, the difficulties are obvious when trying to develop games aimed at a wider audience. As a result, a widespread critique is prevailing that there is little innovation in gameplay and that the game industry has difficulties in addressing non-traditional player groups [6,15].

User-centered design in games
User-centered design (UCD) has been introduced to game development and gained rapid success [14], with a strong emphasis on user evaluation and user testing of a game. Most of these UCD techniques are used fairly late in the design cycle, at a time when most of the decisions have already been made by the game designer and his team, such as the type of story, the leading character, the setting of the game, the rules, the rewards, etc. Essential factors that shape the gameplay are already defined and are not to be changed at that point. Plenty of decisions that should be fed by user research in a UCD process are left to the imagination of the game designer.

It is of great importance to bring UCD techniques upfront in the design cycle of a computer game. The next logical step is to incorporate user research techniques at the beginning of the design process. The importance of early user research has been advocated in the human computer interaction (HCI) community by protagonists such as Cooper, Holtzblatt or Blomberg [1,3,4,9] who state that good design starts with a deep understanding of whom you are designing for. In order to understand your user, to discover unarticulated needs and desires, you need to go out and actively see the user in his natural setting, often referred to as contextual design [9]. Today ethnographic user research and participatory design is seen as an essential element in innovative product design often referred to as human-centered research [2,10,20].

Human-centered game design: Placing playability in context
A similar human-centered mindset is necessary in game design. To innovate gameplay and to enhance the playability of a game, the player should be understood thoroughly and the same contextual questions need to be answered.
Players bring their own context to games, and this context expands the gaming skills or previous gaming expertise of a player. In fact, this is the focal point of the research project. Playability is never an absolute fact but will change from individual from individual, and from social group to social group. Salen & Zimmerman make the same point in Rules of Play: “players bring in a great deal of the outside world, their expectations, their likes and dislikes, social relationships and so on... In this sense, it is impossible to ignore the fact that games are open, a reflection of who play them”. [17]
**Human-centered game design with seniors**

We deemed human-centered design necessary to innovate gameplay for a senior audience. Therefore, we conceived the 'Sbox' project, designing game concepts for and with senior citizens. The research activities encompass two different steps: the project started out with an ethnographic inquiry of senior citizens. Consequently, seniors and researchers brainstormed ideas and converted selected ideas into game concepts.

**Senior participants**

Ten senior citizens (seven male and three female) participated in the research project. The age varied from sixty-eight to eighty years. The following requirements were defined: "The senior should lead an active and healthy life and have a sufficient degree of self-dependence." All seniors are living in Flanders (Belgium).

**Phase 1. Ethnographic inquiries**

We started out by conducting ethnographic inquiries. During the time span of one week, seniors were observed, interviewed and 'probed' at their homes. The first day of the week, the researcher visited the home of the senior citizen and explained the project. Seniors were then asked to record all 'enjoyable activities' or passions. It was stressed that a passion is something that makes the time fly, but really can be anything. Seniors were asked to write down all passions on post-it notes and stick these notes in a passion logbook and take photographs of any artifacts, surroundings or people related to these passions. After two days the researcher paid a second visit to the home of the senior. During this visit he or she reviewed the passions that were noted by the senior during the previous days, using the post-it notes in the logbook and in the environment as input for discussion. If possible ‘show & tells’ of the passions were asked for.

**Phase 2. Participatory design**

Approximately one month after the ethnographic inquiries we started with the participatory design sessions. For this phase, we constructed design teams consisting of one researcher and one senior citizen. A social scientist and an interaction designer were present to moderate and facilitate the design processes.
Seniors and researchers first brainstormed for possible ideas inspired by a small contextual story. In total 399 ideas were generated. Not surprisingly, many of the passions that were listed in the top five during the ethnographic inquiries also ended up as ideas on the wall during this brainstorm. After the idea generation phase, the teams evaluated them on their attractiveness. In the end, each team chose one idea to elaborate upon. This idea was then co-designed into a game concept.

Design teams were also encouraged to create paper prototypes and visualize their vision. For each of the 10 teams, the end result of this participatory design process was a ‘game design (concept) document’ and if possible a paper prototype.

**Passions in Elderly Life**

When defining passions we consciously chose a broad and vague definition as not to place mental delimiters on the information provided by seniors. Similarly, during the participatory design sessions we defined a game broadly as electronic entertainment as not to rule any innovative ideas. However, a consequence of this broad approach was that the passions mentioned by the seniors were quite divergent and hard to process by one approach. We found out that most passions are layered with meanings and should be interpreted carefully. It is only when exploring the passion with the help of the ethnographic inquiries that the true meaning can be understood, e.g. one senior listed ‘Tai Chi’ as her passion, because of her explanation we understood that she really meant spending time with her friends and not the actual sport.

From the ethnographic inquiries, we knew that seniors spend a lot of time on activities such as playing cards, solving puzzles, watching television, etc. But when listing a top five of passions, these activities fell short and did not show up. Neither did these activities make it into the brainstormed ideas and game concepts.

Instead, seniors often mentioned people, values or complex passions that combined different aspect *(my wife, playing cards with my partner, visiting lonely people, organizing events for the club, preparing the trip of a senior movement, Sunday dinner with grand children, daily walk with partner, etc.)*. Similarly, we expected more straightforward game concepts such as card games, puzzles and quizzes.
Instead, game concepts were (although unpolished) surprisingly rich. Most games had a strong multi-player component and mixed several genre, such as adventure, quizzes and role-playing games. Most games offered the possibility to enrich knowledge, such as cultural or travel quizzes, and many game concepts could also attract a non-senior audience.

**Searching for a model to understand passions**

Although the actual game concepts were divergent, we found the underlying values that were addressed to be very similar. To understand what makes gaming meaningful for our senior audience, we conceived a 'passion model' that does not only take into account the actual activity (core) but addresses the underlying layers that we found to be of importance for this audience: connectedness, cultivation and contribution.

*Activity: Core* - These are the actual activities or passions, listed during the ethnographic inquiries, such as playing cards, solving puzzles, watching television, listening to a speaker, walking, gardening, etc. Important is to understand the context of these passions, i.e. the layers that are added to the actual activities.

*Layer 1: Connect* - Most passions and games are about being connected. In first instance to the significant other, children, grandchildren and friends. In addition, seniors often stress being connected to society. Six out of the ten game concepts are explicitly multi-player games. One senior even objected to the project because he felt that computer games were threatening this connectedness: "We don’t need computer games to isolate us further. Whatever game we think of, it is always better to play it together in real life with real people."

*Layer 2: Cultivate* - Cultivating oneself is still highly valued, personal growth is clearly what seniors are aiming for. There is a keen interest in following workshops, listening to guest speakers, cultural travels, reading non-fiction, etc. Five out of the ten games were about educating oneself or the other players.

*Layer 3: Contribute* - Finally, we found that it was often stressed that one should contribute to society. Our participants wanted to make themselves useful, and listed passions such as watching over grandchildren, visiting lonely or disabled people, managing the administration of an organization, etc. The same concern was addressed during the co-design. One of the games that was thought of by a senior was called ‘the good deed’ game. Another game was explicitly designed for those seniors whose immobility was isolating them, whereby designing the game was a good deed in itself.

**Conclusions**

The ethnographic inquiries provided detailed insight in what constitutes a passion and the context of these passions, which formed a valuable input for game ideas during brainstorm sessions. The co-design led to creative and non-stereotypical game concepts that, although they lacked detailed gameplay, surprised the researchers. Furthermore, this human-centered methodology allowed us to define a passion model that helps to address underlying values important to meaningful gameplay for this audience. The ingredients of innovative gameplay for senior citizens should not only focus on the activity itself but also incorporate aspects that allow for connecting people, cultivating personal growth and contributing to society. We believe this insight will help create successful future game designs for the target audience and ensure ‘meaningful play’ in elderly life.
Future work
A confirmation of this model of passions is necessary on a broader scale. As only ten seniors participated in the study, it is still a small sample to draw final conclusions. Also, we wonder if this methodology and modeling of passions can be transferred to other non-traditional gaming audiences such as women, ethnic minorities, young children, etc. Finally, we are investigating how other frameworks on media use such as the 'Uses & Gratifications’ relate to the findings of our human-centered methodology.

For a detailed discussion of the game concepts and the passions or for a more in depth discussion of the methodology, we like to refer to http://wiki.groept.be:8080/confluence/display/Sbox/

References