

Reflections on Gender Aspects of Designing an Educational PC-Game exemplified by a Project in Cooperation with the German Maritime Museum Bremerhaven

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ABSTRACT

Software design processes as well as game-based learning applications are embedded in social contexts, and thus are affected by gender structures on various levels. In this paper, I present a case study of developing an educational PC-game to be used in the German Maritime Museum Bremerhaven and discuss a range of gender aspects concerning the design process of this game.

Especially gender inclusive design strategies and the underdetermined design philosophy of Justine Cassell are reflected on the background of our case study, which was performed by a Digital Media master study project at the University of Applied Sciences Bremerhaven.

Keywords

Gender inclusive design, game-based learning, museum games

INTRODUCTION

Designing an IT-application and especially a computer game is not a gender-neutral process. Cecile Crutzen for example argues that design processes in computer sciences are viewed as technical processes and thus stereotyped as “male” in contrast to social processes which are assigned to female values. [4] As main problem of genderizing design processes she identifies the construction of dichotomies like “technical – social”, “subject – object”, “design – use” and the (implicit) connotation of the dominating principles with male behaviour or values.

A comparable polarisation of attitudes and values can be observed related to computer games: “Action versus interaction”, “competition versus relationships”, “fighting versus collaborating”, “‘blowing things up’ versus ‘imposing order on the chaos’” are typical dualities when talking about game preferences of boys and girls (compare Prensky 2001 and Cassell 2002). While there were nearly no female computer game players until middle of the 1990s, the “girl’s game movement”, promoted by the games industry, has opened up the market for female game players and increased the number of games designed for

girls like doll playing, quizzes about romances, imagining, building social relationships etc. (see [1], p.6f). In order to extend the games market, “gender is an issue very much on the minds of game makers” [7, p. 140]. At least for the United States, this has the consequence that “more women play computer games” and “the game gender gap has disappeared” as game designer J. C. Herz states (quoted according to [7], p. 141).

However, this development is not satisfying as long as the games themselves are still gendered. As long as games are designed especially for girls in order to increase the games’ market, they reproduce gender stereotypes and make it difficult for girls and boys to choose games independently from their gender identity.

In her book “Gender Inclusive Game Design – Expanding the Market“ Sheri Graner Ray [8] also argues from an economic point of view. According to her, understanding the issues and barriers connected to gender, allows the game industry to benefit from the increasing percentage of female internet users.

But, what are characteristics of “gender inclusive games” and how to design them? This question becomes especially interesting, when designing an educational game for a museum, as is the case in our project, where the game should be educational and engaging for male as well as female players.

Before describing this case study of developing a game-based learning application for the German Maritime Museum in more detail, I first want to dwell on gender aspects related to games on different levels.

GENDER ASPECTS RELATED TO GAMES

Concerning software and game design, we meet gender structures on various levels, especially on the level of the users and on the level of the developers.

On the *level of the users*, an important issue for gaming preferences of boys and girls concerns the already mentioned stereotypical dichotomies of game types

according to which e.g. competitive games are stereotyped as male whereas relationship-oriented games are supposed to be female. So, it is hard for girls to identify with the goals of e.g. fighting and racing games. The same holds for the refusal of boys to play “girls’ games” like doll play or caring for horses. This seems not only due to their different socialisation but especially because these games are stereotyped as belonging to certain gender identities. When interviewing school children about their gaming preferences during our case study, we found these gender stereotypes of games more confirmed than expected. When asked about the characteristics of girls’ games, one boy e.g. said: “Games where they comb horses”, another one said “To design games for girls, make them pink!”

Above that, user preferences obviously are also related to the avatars of a game. According to the experiences of the game developer Sherry Graner Ray, the “gender of the avatar might not seem important when compared to other elements of game balance such as graphic and engine considerations; but it can be a very important issue for female players and can have a huge influence on female player’s enjoyment of the title.” [8, p.95] However, just to offer avatars of all gender does not necessarily imply that players feel comfortable with avatars of their gender. Especially when avatars are “hypersexualised” and seem to be permanently “ready for sex”, as is the case for a lot of female avatars [8], female players do not feel attracted by them.

So, if we want to develop gender inclusive games, we have to allow players of both (or all) gender to identify with the game and its culture. Especially in a museum context, a game has to meet the interests of male *and* female visitors, at least of the target group.

Regarding the *level of the developers*, studies about software and especially game design have found out that male designers unconsciously design for male target groups, because “their gender preferences seem to influence their design decisions more than wanted”. (see [9], p. 282)

For the design process of software in general, similar ideas have already been discussed by Cecile Crutzen in 1993. According to her, developers use filters in the design process, “filters which are not objective but mostly subjective and determined by the experiences of the observer.” These filters determine among others the selection of the problems to be solved and the decision of how to model the solution out of many possibilities. (see [3], p. 5). So, if male developers are predominant in software projects, the filters will be predominantly coined by male perspectives.

Following this argumentation the question arises, if a gender-mixed group of software developers offers the chance of having a broader variety of filters and thus being able to develop more gender-balanced models and applications. Or do we have to follow Justine Cassell who states that developing games without considering that “the

masculine remains the invisible norm” in our culture is “likely to simply perpetuate male dominance” as is the case with most of the videogames. (see [1], p.8f) According to this argument, even in a gender-mixed developer group special effort has to be undertaken to really develop gender inclusive applications.

In this context, Cassell proposes a design philosophy which she calls “undetermined design” allowing users “to engender themselves, to attribute themselves a gendered identity of any one of a number of sorts” (see [1], p.13f). To achieve this aim, she especially appreciates subjective experience and experiential knowledge, insights from feminist pedagogy which according to her should be applied in software design by transferring “authority from the software designer to the user”. (ibid.) So, some principles of her “undetermined design” are similar to user-centered and participative design approaches, which have been developed in the 1970s and 1980s to improve the usability of computer systems. All these approaches are based on the idea that systems have to be designed for a diversity of users, users of different gender as well as of different cultures and experiences. With active user participation during the design process it is supposed to integrate diverse viewpoints and thus develop systems which are user-friendly as well as more inclusive for everyone.

Some observations in our Hanse-game project concerning the issues of gender-mixed developer groups and user participation will be discussed later.

THE CASE STUDY

Goal of the Project

In April 2008, we started a one-year study project in the International Master Study Program Digital Media at the University of Applied Sciences Bremerhaven. This project called “OdysSea” pursued the main goal of designing an educational PC-game concerning the medieval exhibition of the German Maritime Museum Bremerhaven (GMM) (<http://www.dsm.museum>) around the ancient ship “Hanse Cog” and the “Hanseatic Times”.

The interest of the museum in this game was to motivate visitors to visit the exhibition of the medieval fleet. Playing the game should not replace the visit of this exhibition. In contrary, visitors playing the game should benefit from having visited the exhibition before. They should get important information and clues for the game from the exhibition.

Main target group of this game should be school children (from 11 years on) and families. Important learning objectives should concern the purpose of a cog, how to sail and navigate on a cog in medieval times, reasons for the foundation of the Hanseatic League, the trading routes in Hanseatic Times, the importance of certain goods for certain Hanseatic towns etc.

The biggest challenges of the project were seen in the requirements of integrating an engaging and educational game in a museum environment, and the initial question

was how to develop an educational PC-game appropriate to enhance the visitor's experiences in a museum like the GMM.

So, gender issues have not been the main focus of our project. However, having a gender mixed target group as well as a gender mixed developer group, we wanted to keep a gender-aware eye on the development process. As leader of the project, I had especially the chance to closely observe the design discussions of the project group, which is composed of four male and two female students. I will come back to these experiences after discussing the idea of the game.

An Educational Game in a Museum Context

Based on the learning objectives the game idea was developed by the OdysSea project team.¹ Frame of the game is a story, where the player is supposed to be in the role of a young captain of a cog in medieval times. His task is to show his sailing and navigation skills as well as his trading skills in order to become successor of his father, who is a prosperous trader. So, part of the game is a sailing simulation (see Figure 1), during which the player should apply his or her knowledge about sailing and about navigating in medieval times, where compasses and sea charts did not yet exist.



Figure 1: Sailing simulation of the Hanse Game prototype

The other part of the game consists of trading scenarios in one of the Hanse cities. Here the player should give proof of his or her knowledge about the Hanseatic League, about the goods traded between the Hanse cities, about the protection against pirates etc. (see Figure 2). Until now, a first working prototype is implemented and tested.



Figure 2: Trading scenario of the Hanse Game prototype

Emphasising the active role of the learner, we followed a game-based learning approach. In contrast to traditional didactic approaches, which look at learning as hard work for the learner, a game-based learning approach tries to combine “what the learner enjoys, with what the learner needs to know” [7, p. 91], and can be “regarded as a special case of experiential learning” [6, p. 18]. Especially educators with a constructivist understanding of learning have become aware of the “motivational power of computer games” [2, p. 33].

The Hanse Game, which is supposed to be played after visiting the medieval exhibition in the GMM, combines learning from the museum exhibition (and from school) with the fun elements of an interactive game. Knowledge acquired from the exhibition will help the players solving tasks in the game like navigating with landmarks, protecting against pirates or trading the right goods to the cities which have a need for these goods.

As a survey which we carried out among school teachers in Bremen and Bremerhaven shows, all of them are interested in such an educational PC-game in the museum. It allows them to take advantage of the motivating effects of a museum visit as well as of computer games to support teaching about Hanseatic Times.

Gender Aspects of the design process

Though the investigation of gender issues was not the main interest of this project, some observations may contribute to gender discussions in the context of game design. As the game developers in the OdysSea Project were not only a gender mixed but also an international group of master students, according to my observation design decisions became more visible than in a more uniform design team. Especially when facing new or changed requirements regarding the game like having limited play time (not more than 5 to 10 minutes) as the museum requested, oppositional viewpoints became even more obvious.

In the following, I want to focus on some gender-related experiences during the game development concerning

- the characters in the game,
- decisions about competitive and collaborative elements in the game, and

¹ Members of the OdysSea project team are: Leonardo Araujo, Consuelo Gonzalez Garcia, Walter Jenner, Anke Königshulte, Minghay Lee, Andi Pramono.

- usability engineering.

Characters in the game

As mentioned already, the Hanse Game is based on a story about a captain of a cog in medieval times. Unfortunately, to make the story realistic, as required by the museum, the main characters of the story have to be male, because in medieval times there were no female captains or traders. So, it was not possible to offer players the choice of playing in the role of a female captain.

However, to make this constraint explicit, one of the female developers had the idea, nevertheless to include the possibility of choosing a female captain, and in case the player really chooses this character, he or she will get an appropriate feedback, that this choice was not possible at those times. Thus, players could additionally learn about gender roles in medieval times. An argument against this proposal was that this learning objective is not important enough to cause players losing time. Even though this idea was supported by the majority of the project group (including all female developers) it was skipped later, because of the limited play time.

Competitive versus collaborative and educational game elements

The developer who was most interested in implementing the game engine was also the most dominant in deciding about the nature of the game. The example of deciding about the collaborative concept may illustrate this:

In the beginning of the project, each project member described his or her vision of the game based on the initial project idea of developing a collaborative learning game about the medieval Hanse cog and the Hanse Times. Concerning the collaborative concept, these ideas differed a lot. The minimal vision of collaboration suggests playing in teams whose members are sailing with different cogs for the same trader. The only collaboration consists in deciding for the destination, where they hope to earn most money for their goods. After this decision, players sail and trade on their own, and get scores depending on how good they performed. At the end they are scored in teams as well as individually. This was a rather simple vision of collaboration compared to others who proposed that players could choose between different roles on a cog which have different tasks simulating real tasks of a crew like measuring the depth of water, navigating with sea book and landmarks, setting the sails etc.

So the visions differed from having just a “faked” collaboration of players in a team, who in fact, also compete against each other, to having real collaboration between members of a crew on the cog, who may perform better, when collaboratively applying their knowledge acquired from the exhibition.

During the design process, the developer with the minimal collaboration concept strongly promoted the idea of having a sailing simulation with players controlling and sailing a boat as a main part of the game. Main argument was that a racing game was much more fun than collaboration on a

cog. Soon it became clear, that the developers had to decide between implementing a sailing simulation and having a more complex collaboration scenario on board of a cog. After long disputes, they decided for the sailing simulation, though in their initial game visions the majority had favoured the collaborative idea.

There may be a variety of reasons for this decision like the new requirement of the museum to have limited play time of 5-10 minutes for the game, or like the argument that the implementation of collaborating players in different roles is too complex for the frame of this project. According to my observation, one reason for this decision was also that the responsible programmer of the game engine, who favoured the sailing simulation, was the first one who presented an implemented prototype of his idea. In this case, this was a male developer. However, independently of the concrete gender of the developers I think it matters more that he was dominating with his programming skills, which in the design discussions counted more than “soft skills” like e.g. implementing didactic concepts. Later, the female developer who mostly promoted the collaborative idea commented this design decision as follows: "We gave up finding a solution, but perhaps it would have been possible."

We can consider this decision also as a decision for action (sailing simulation) against interaction between players (collaboration on the cog). Taking into account Prensky's assumption that girls' preferences in computer games “are such as interaction rather than action” [7, 142], this would mean for the OdysSea Project that most of the design decisions have been made in favour of “male” concepts of this dichotomy.

A related issue concerns the question how “learning” and “applying knowledge” could be integrated in the game. The initial ideas reached from “players have to react in the right way to external events like weather changes and pirate attacks”, or “integrate some quiz questions related to special events” to “players have to complete missions like “setting sails”, “repairing the boat”, “trading goods” etc. The integration of missions in the game as proposed by one of the female developers would have allowed to use a more explorative learning approach and to offer options for learning about different topics according to the interests of the players. However, after having decided for the sailing simulation as one main part of the game, the reduced play time was again the main argument against integrating missions in the game. So, in favour of the action concept, also the learning concept had to be reduced.

Usability engineering

In order to design a game user-friendly for the target group of 11-15 years old girls and boys, it was evident that usability tests with children of this age had to be integrated in the design process. As we wanted to consider the diversity of viewpoints, not just male and female but also from children with different social backgrounds, the tests have been performed with children at different school types

and different quarters of the town. The results show that the game prototype as far as it is developed now is equally engaging for boys and girls.

Without going into the details of these tests, I just want to discuss one observation related to the discussion about the results of the usability tests, which shows that the interpretation of the results may be completely different depending on the perspective of the interpreter. In the perspective of the programmer e.g. the results of the usability test were seen as successful, because the tested children managed to control the sailing boat. However, in the perspective of the didactic designer the results were considered as not satisfying, because the children did not understand some of the main learning objectives.

As the main purpose of usability tests is to integrate the viewpoints of the users in the design process, it is very important to take care that the results are not again filtered by the developers. This shows again the importance of having different perspectives included in the design team, if we want to develop a balanced application.

Results and Conclusion

Though gender inclusive design was not the main interest of this project, the observation of design discussions in the development group revealed some aspects, which might be relevant for gender inclusive design strategies.

Cassell's recommendation of transferring "authority from the software designer to the user" [1] and of integrating the perspectives of users by using participative design methods and usability tests sounds promising for gender inclusive design. However, transferring the results of e.g. usability tests back to the design process has to be performed carefully without narrowing the perspectives through the filters of the developers. For this purpose, it is important to include more than the main stream perspectives in the design team, and to allow them to unfold their full potential.

Working with a gender-mixed and international developer group in the described case study, one question was, if the different perspectives included in this group guarantee already a balanced application development. For sure, a gender-mixed developer group is a step in this direction. But it is not yet *the* solution. Perhaps, such a mixed group with a rich range of perspectives offers the advantage of making design decisions more visible than usual, because conflicting viewpoints are exchanged during the design discussions. And perhaps these discussions cause already more balanced decisions. But, for developing balanced applications we also need a balanced system of values, where not e.g. hard skills are ranked higher than soft skills, or – in case of game design – where action is not ranked

higher than interaction. This means, design decisions are not only affected by subjective experiences and preferences of the developers, but also by the environment and value system, on which they are based and where according to Cassell "the masculine remains the invisible norm" [1, p. 8] So, gender inclusive design requires not at last paradigm shifts and deconstruction concerning these value systems.

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