Storytelling as a Method of Gathering Perceptions and Experiences in Human-Centered Design - The Relation between Children and Their Eyeglasses

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Abstract

Eyeglasses are specialized products, in which designers contribute to human needs, especially considering the product as an orthosis. Among eyeglasses wearers, the children require special attention. The study presented in this article is part of a research that aims to define guidelines for the design of children's eyeglasses. For this research has been adopted a Human-Centered Design methodology and to consider the relevant aspects of the product to your potential and central users was applied the Storytelling method. This article presents the data collected by this method applied with thirty children. The stories were analyzed, and the categories in which was possible to evaluate emotional, formal, medical, reflexive and functional subjects mentioned by the children were defined. The results and discussion will provide specific and more subjective content that will be combined with other methods to be part of the final design guidelines for children's eyeglasses.

Keywords: Human-Centered Design, Eyeglasses Design, Storytelling, Product Experience, User Centred Design

1. Introduction

Eyeglasses are specialized products, in which designers contribute to human needs, since a great number of people need this product as an orthosis, and it is essential to their daily life.

Currently, the eyeglasses are remembered for their formal aspects, as well as its main corrective function,. Some argue that currently the product is more an accessory than a utility, as stated by Bastian (2001, p.35) "Designed for production in large scale, the eyeglasses are objects of industrial design with the refinement of handcrafted pieces…which puts them between design and fashion." However, beyond aspects of consumption and fashion, the eyeglasses should be primarily conceived and designed for those who wear them, because it is a personal and fundamental object to everyday life, and an extension of the body and the human senses. Therefore the product should be developed considering guidelines that focus on the physical and emotional needs of its wearers.

Among the wearers, children's audiences demand studies and extensive research, as reported by Gozlan (2007, p.52) "the guidance needed for eyeglasses for children is one of the toughest in the daily routine of the optical field, because it requires technical skills and also psychological competence for adapting the child and guiding parents".

Therefore, the design of children's eyeglasses must consider, in addition to formal and aesthetic requirements (ergonomics, anthropometry, performance and usability), also perceptual, subjective and emotional aspects, that stimulate the affection of the children audience, making the everyday product's use pleasurable and attractive.

The complete research adopts the perspective of Human-Centered Design (HCD), which is concerned in how people see, interpret and live with some artifact, also considering the meaning as central part of its discourse (Krippendorff, 2000). The author also comments that the application of the HCD must be performed in a defined group of stakeholders. For this study were established the following stakeholders: children who wear eyeglasses; their guardians; the optical attendants; pediatric ophthalmologists and factories/designers of eyeglasses.
The goal of the complete research is define guidelines for the design of children's eyeglasses. To achieve this goal, different methods will be applied for each one of the stakeholders mentioned before. This paper presents a part of the research and the results of the Storytelling method applied with one of the stakeholder groups; the children who wear eyeglasses.

2. Method

The storytelling is considered a narrative tool that is currently used in various fields of knowledge, from pedagogy to marketing, and it is also present in the HCD and User-Centered Design methodologies such as Institute of Design at Standford (2013) and Suri (2003). According to Parrish (2006), storytelling is a process that combines analysis and synthesis. The stories are always based on extracted facts of life, as personal experiences or observations, and also may go further. Due to this characteristic, the author claims that storytelling is also the process of discovering the narrator of the story. The stories can be seen as a form of research in which, besides the possible analysis, elements of the world are brought together with imagination. This characteristic makes the stories a source of information that can be used by designers during the development of their projects.

In terms of storytelling related to a product, Battarbee (2003) states that the stories of products can provide an understanding of how the product and life interact together in lasting and meaningful relationships, and how these relationships can be corroborate through design. The author emphasized that storytelling can be very useful in the early stages of the product's design. According to Lin et al (2011) it is advised that the person who lived the history must tell it (orally or writing), since in previous experiments it was observed that a person retelling a story which does not belongs to them, even with truth and emotion, becomes noticeable for the audience that the story does not reflect a experience of the narrator.

For this research, it was chosen the writing storytelling method, in which the user is the author of the stories, as one way to gathering information from the children group. The objective was to collect information about the product, so the proposed theme of the story should have a generic and comprehensive character. Thus, the following theme for storytelling was set: "Me and my eyeglasses".

The participants were children using prescription glasses of both genders, in the age group of 7-11 years, therefore belonging to the stage of development called concrete operations, as classified by Jean Piaget (1896 - 1980) (Terra, 2013). Another determining factor in this age group was the need children have to be literate, to make the proposed method possible.

The study included a total of thirty participants from the southeast and northeast regions of Brazil, fifteen girls and fifteen boys.

The first procedure was an introductory document which was also a step by step method with some important observations. The method should be applied at a time when the child was receptive to writing; adult should give a ruled sheet of paper, pencil and simply announce the title for the child. There should be no influence and ideas from adults. The child should be free to write as much as desired, and when they stopped writing the activity was considered finished.

The data was colleted by sending an email to the guardians of the children, so they could apply and then return the stories. And also by visiting three schools, one public and two private, which authorized the application of the method on the students who wear eyeglasses.

To analyze the stories, topics were defined from similar subjects present in their stories. The technique used was based on cluster analysis proposed by Mingoti (2005, pp.155-156) in which the objective is to divide the elements of the sample or population into groups so that the elements belonging to the same group are similar between itself.

3. Results and Discussion

The stories' content analysis resulted in eight main topics according to the statements found in the written stories. These topics were grouped in four other categories created to subsidy a better understanding of the topics and the practical application (Table 1). The difference between information of each gender was observed in each topic since the eyeglasses for boys and girls have formal differences.

Table 1: Table Relating the Topics Grouped in Categories, Some Insights Gathered from Those and Also Some Direct Quotes from the Children Stories

Topics		Direct Quotes	Category	Some Insights About Eyeglasses Design
1	Usability	" …I wear eyeglasses, I don't like to walking around with it…" "… I adore my eyeglasses…"	Functional	Even with negative aspects, the majority declares that likes to use the product. Uncomfortable caused by disease. Perceived benefit of using.
2	Symptoms of not using the product	"… (I) remember that everyday in class I force my eyes, only to see what was written on blackboard…" "… I wear eyeglasses because my eyes sting and it gives me headache…"		
3	Feelings about wearing the product	"…when I wear eyeglasses everything gets renew, everything become colorful…"		
4	Product Characteristics	"…it was black and rounded, but I did not wear it much…" "…mine are batman eyeglasses..." "… my eyeglasses are purple light and have pink flowers…" "…I think my eyeglasses are pretty…" "…my eyeglasses are ugly…"	Formal	Girls talked more about product characteristics than boys. Most talked characteristics by girls were: color/brand, overall look/shape and material, in this order. The characteristics highlighted by boys were: overall look/brand and shape, in this order. They worry about maintenance, loss, cleaning and damages.
5	Product Care	"… I hate when it gets dirty … it is horrible to clean…" "…it breaks if dropped on the floor, it scratches, you have to take care and clean it…"		
6	Medical exam and eye disease	"…my father took me to a appointment and the doctor said - he needs a eyeglasses !…" "…but to wear it you have to make an exam to know what is your lens power…" "…the first ophthalmologists looked, made an exam with only one instrument and said – this girl is myopic…"	Medical	Boys talked more about the visit and experience of medical exams. Same number of people of both genders mentioned about their eye disease.
7	Third party opinion	"…I have never suffered bullying because of my glasses, but I know girls who suffer a lot because of it…" "… sometimes wearing glasses can be bad, you can be excluded and people can call you nerd…" "…my mother and father also wear it (glasses), so sometimes I wear it…" "… but my mother ask me to wear it (glasses)…"	Reflexive	The influence of family and friends appear equally. Few children talked about their appearance and their perception of themselves wearing glasses.
8	Appearance wearing eyeglasses	"… I think I look very weird wearing eyeglasses…" "… we look different wearing eyeglasses, I become more elegant and charming…"		

Source: Authors (2014)

3.1 Functional Category

This category deals with functionality and correction issues in eyeglasses. The three topics were mentioned very frequently in the stories, which demonstrates the strong association of the product with its corrective function and the participants perceptions when the product is use or not.

The *Usability* topic was observed by both genders equally. Most children in their stories talked about if they liked wearing glasses, the majority in a positive way. Therefore it is observed mostly a good product acceptance, but still there is a declared aversion by some users.

In the *Symptoms of not using the product* topic was observed that almost half of the participants talked about the many discomforts caused by refractive errors, when eyeglasses are not been used. On the other hand, in the *Feelings about wearing the product topic*, most participants made a point to mention about the benefits that the eyeglasses provide when used.

3.2 Formal Category

This category is related to formal characteristics of the eyeglasses. In general, the two topics of this category did not appear in the texts as much as the topics of functional categories, but still had good representation. The content of the formal category is very objective and it is most directly applied by designers on projects.

Among the *Product Characteristics* mentioned can be observed that more girls than boys talked about this topic. The most commented characteristics by girls are related to the colors of the frames. Also there are positive comments about the product overall look and mention of the brand. The shape and material of the product were less mentioned by both genders. Among boys, the characteristics most mentioned were the overall look (regardless of whether it was mentioned in a positive or negative way), and the brand, with same frequency and number of mentions.

The *Product Care* topic was not mentioned many times. However, the existing comments addressed specific and detailed aspects that are experienced by users. These data serves as indicative for improving issues in eyeglasses designs, such as material resistance, maintenance, loss and cleaning for example.

3.3 Medical Category

The children wrote about the exam experience and their eye problems. This content is related and reinforces the functional categories of the product, since the children mentioned the reason or when they began to wear the product. Among the narratives it wasn't found any aversion to the experience of going to the doctor and doing the exams.

The exam experience was more mentioned by boys, and those who wrote about the visit to the ophthalmologist, also commented about ophthalmic problems. Girls mentioned in their stories more about the ophthalmic problem than the exams.

3.4 Reflexive Category

The topics of this category reports how users see themselves and are seen when wearing the product. Some stories when children concerning about being good-looking wearing eyeglasses is accompanied by negative reports about third party opinions. Therefore, in these cases the *Appearance* topic can be interpreted as a user self-assertion in defense to a bad review and stigma product. About family opinion, there are cases in which the discourse of being good-looking wearing glasses is tied to parents also wear eyeglasses. In this case, the fact that parents are wearer serves as a stimulus or positive influence for children. In general, most children mentioned the opinion and influence of others on wearing the product, related or not with the appearance, demonstrating that there is still a concern about the stigma for some of them.

The *Third Party Opinion* topic was often mentioned by both genders. Worrying about friends opinions, the stories were mostly related to the stigma of the product, even when there were reports of encouragement, and they were aimed to increase the self-esteem of the user of the product and, therefore, implied that there was a negative feeling related to wearing the product. The family was mentioned when they talked about their parents' request of wearing the product as well as their encouragement, and also when their relatives were an inspiration and motivation, in cases where in which they were also users.

The *Appearance* topic was mentioned with the same frequency by both gender, which not a lot, demonstrates the need of self-evaluation, positive or negative, on how one sees with the product on the face. The low occurrence of the subject can be also interpreted as an indicative that the product is perceived as an accessory.

4. Final Considerations

After the categories' discussion it is important to analyze the style and organization of the narratives obtained with the method. The storytelling method was applied with a broad title, enabling the children to produce any kind of stories about the product, including fantastic and ludic narratives. However, in thirty stories analyzed, from geographically distinct locations, the contents about the product discussed real issues, like emotions and experiences related to its use.

This narrative structure found demonstrates that eyeglasses were translated by the children as a very pragmatic object. Therefore, this demonstrates that the characteristics of the product as a corrective item are most remembered and mentioned by children than the characteristics, memories and facts of the product as an accessory.

For this entire research the data (topics and categories) is important because it is the user's subjective perception of the product. The Human Center Design methodology provides data which reflect the desires and needs of users, so the storytelling was appropriate to seek the contents commented by children allowing that spontaneous topics arise, without inducing a specific subject and also bringing unusual and unexpected themes.

Also, the subjective data gathered with this method, guided the research and helped to create data for other collection method with children that is more directed and objective. Therefore, the results of those two methods with different characteristics will be analyzed and combined to define final and complete information from the children about the design guidelines for their eyeglasses.

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