

How Scenarios Support Empathy In Design: A Case Study Of Undergraduate Students

In user-centred design, there is recognition that designers must understand the perspectives of the users for whom the product or service is being designed. Sometimes however, designers may not have direct access to end users or their environment and must rely on techniques to evoke their own and others experiences to uncover user needs. The purpose of this paper is to explore the role of scenarios in developing empathy for the users in an undergraduate design project where there was a lack of access to users and the context of use.

This research explores the role of scenarios in design and how they are used to empathise with and understand the needs of users to develop and test design solutions. We describe how scenarios were used and outline the techniques needed to build compelling scenarios. The findings show that to use scenarios effectively and probe beyond the surface elements of user understanding, student teams may require these techniques to support and guide scenario creation.

Introduction

Designing for user experience begins with creating a rich, empathic understanding of the users' desired experiences and only then designing concepts and products to support them. Empathy can be described as the ability to understand what it feels like to be another person and relating to that person's situation from his/her own perspective (Kouprie and Visser 2009). Empathic design is about making interpretations of the needs, desires and motivations of people and envisioning possible future situations of product use (Steen 2011, Battarbee and Koskinen 2005). Nielsen (2002) states that it is important to understand the users environment, the character traits of the user, their goals and tasks.

Scenario-based design is used in software development to predict and test how users will interact with design solutions. They are typically used to describe the future use of a system or web site from a specific, and often fictitious, user's point-of-view

(Carroll 2002). Scenarios can also be used for a variety of purposes; at the beginning of the design process to illustrate user needs, goals and actions, and later to evaluate system functionality, to design attributes and features and test solutions (Nielsen 2002). Scenarios are stories that must consider the setting, the actors, their personal motivations, traits, behaviours, knowledge, capabilities, goals and their interactions with various tools and objects (Rosson and Carroll 2009). An effective technique for generating scenarios is to first describe a set of hypothetical stakeholders - individuals who can represent the people involved in the product or service (Rosson and Carroll 2009). These may be used then to create personas of archetypal fictional users or stakeholders to depict fleshed-out characteristics. An effective approach can be to identify extreme situations of both positive and negative situations as this may lead to hidden opportunities (Schoemaker 1995, Gruen et al. 2002).

Much of the literature on scenarios shows that they are a pre-planned activity to evaluate how users might interact with concepts. This paper shows how scenarios can be adopted in a variety of ways from spontaneous use in discussion to a pre-planned activity throughout the process to identify user needs as well as evaluate concepts.

Research method

This case study explores a collaboration project which was conducted between

References

- Battarbee, K. and Koskinen, I. (2005) 'Co-experience: user experience as interaction', *CoDesign*, 1(1), 5-18.
- Buchenau, M. and Suri, J. F. (2000) Experience prototyping, translated by ACM, 424-433.
- Carroll, J. M. (2002) Scenarios and design cognition, translated by IEEE Computer Society, 3-3.
- Gruen, D., Rauch, T., Redpath, S. and Ruettinger, S. (2002) 'The use of stories in user experience design', *International Journal of Human-Computer Interaction*, 14(3-4), 503-534.
- Keller, I. and Stappers, P. J. (2001) 'Presence for design: conveying atmosphere through video collages', *CyberPsychology & Behavior*, 4(2), 215-223.
- Kouprie, M. and Visser, F. S. (2009) 'A framework for empathy in design: stepping into and out of the user's life', *Journal of Engineering Design*, 20(5), 437-448.
- LeRouge, C., Ma, J., Sneha, S. and Tolle, K. (2013) 'User profiles and personas in the design and development of consumer health technologies', *International journal of medical informatics*, 82(11), e251-e268.
- Nielsen, L. (2002) From user to character: an investigation into user-descriptions in scenarios, translated by ACM, 99-104.
- Rosson, M. B. and Carroll, J. M. (2009) 'Scenario based design', *Human computer interaction*. Boca Raton, FL, 145-162.
- Schoemaker, P. J. (1995) 'Scenario planning: a tool for strategic thinking', *Sloan management review*, 36, 25-25.
- Steen, M. (2011) 'Tensions in human-centred design', *CoDesign*, 7(1), 45-60.
- Suri, J. F. (2003) 'The experience of evolution: developments in design practice', *The Design Journal*, 6(2), 39-48.

students from Hogeschool Utrecht [HU] in the Netherlands and the University of Limerick [UL], Ireland. The data analysis draws insights from group observations, field notes, review meetings and focus groups with six student teams.

The project design brief entailed the redesign of an Aircraft Crew Rest area (a section located in the underbelly of a large aircraft that is fitted out with sleeping and recreation facilities for flight attendants) to create an improved resting experience for long haul flight crew. The added complexity was to understand human behaviour and the issues for people of both genders, from culturally diverse backgrounds, sharing a very small space and sleeping in close proximity to one another. As part of the brief the teams were provided with three personas of Flight Attendants; Jasmine, Braham and Irene created from in-depth primary research. These were used to act out scenarios by exploring the routines and activities that the personas may follow in their interaction with the crew rest. Personas are fictional characters created to represent the different user types within a targeted demographic (LeRouge et al. 2013).

Findings

This section describes how scenarios were used throughout the process as well as the techniques that supported their use in creating an empathetic approach during the project.

The scenarios were used in two distinct ways. Firstly, as a spontaneous activity that the teams used to understand the perspective of the Flight Attendants, empathise and uncover their needs and in turn generate solutions. This was facilitated by group discussion. Secondly, the scenarios were used as pre-planned and constructed activities which were supported by the use of mock ups and role play.

Techniques to support scenario creation

A number of techniques and tools provided support, in the creation of the scenarios.

Stories and personal experiences

From a social perspective, stories are the means through which human experience has been shared for generations. Given the

right social environment people can find sharing stories to be a natural, effortless, and compelling experience (Gruen et al. 2002). To appreciate what it was like to sleep and spend time in a crew rest the team members were prompted to draw on their own related experiences of spending time in similar circumstances and share the experiences as stories. The experiences ranged from spending time on planes, trains, buses, in hostels, at festivals, in college accommodation and in hospitals. When user experiences resonate with personal experiences a deeper understanding of the user experiences is obtained (Suri 2003). In the following example, through questioning a tutor, draws out one student's story about a related experience to depict a scenario.

Tutor A: *"Did you ever have experience where you did not feel safe going to sleep?"*

P: *"Yeah I was inter-railing on a night train where you just have a seat in a carriage with fifty other people so that's not the best place".*

The students began to use story telling spontaneously to draw out issues such as cultural differences that may emerge when people are sharing confined spaces.

'When you have to sit next to someone that smells very bad, I had that on an 8 hour flight. At dinner time he was burping and made strange sounds. In some countries that's normal'.

Analogies

As the students did not have direct access to a crew rest the scenarios were enriched by making analogies to related environments. The following scenario is embedded with the analogy of going on holiday in a cramped car to empathise with the conditions of a cramped crew rest. By drawing on this related experience the students were able to identify the issues of sharing a crew rest such as restricted space, overheating, crowding and a lack of oxygen: *"Going on a holiday is always a disaster. The car is stuffed with useless things with no room to move. The car always makes noise and there is always light. Mostly the driver is listening to some music and has the most comfortable seat of all. The back seat is narrow and you are almost sitting on each other which increases body heat and decreases fresh oxygen."*



Figure 1:
A section of a mind map
incorporating scenarios

Metaphors

At the beginning of the process the use of metaphors within the analogy also added to the teams understanding of the needs of the users. In the following example the teams used the metaphor of a ‘sea breeze feeling’ to imagine the desired experiences of the Flight Attendants. *“You want that sea breeze feeling, the freshest air you’re going to get, straight off the water so it’s got a really nice smell.”*

Personas

Personas were provided to the teams to support the mapping of ‘a day in the life technique’ of each of the three characters. While the Personas did not explicitly cover every conceivable user they highlighted the different, and sometimes conflicting, needs of individual users: *“We looked at personas particularly Jasmine as she is the most important one. She wants men and women separated in her culture. She doesn’t want men seeing her, she feels uncomfortable with it.”*

Mind maps and process flow diagrams documented the scenarios in detail (see Figure 1).

To dive deeper into the persona profiles and understand why a Flight Attendant would act in a certain way the teams used the

technique of the ‘5 Ws’ (who, what, when, where, why) and how. This facilitated the team to understand the type of interaction of the crew users along with identifying the barriers to positive interaction. While the teams were provided with personas, new ones were also created on the fly and given names. This also provided richer character depictions as they were drawn from the students own frame of reference. In the following example instead of using the personas provided the teams spontaneously use two new personas named Mary and Paddy. This scenario highlights the conflicting needs of the two characters where Mary wants to take over the elevator for a much longer period of time. This then forces the teams to evaluate the viability of a solution and how issues might be resolved:

L: *“Mary opens the door and goes down the elevator and she wants to change her clothes, get into her pyjamas, take off her makeup, get into bed and watch television. And you have Paddy who’s going in and he is changing his clothes, he has no hair and makeup and he just wants to play on the play station.”*

B: *“That’s fine, so he uses a stairs of some description or a rope ladder.”*

L: *“No because you can have Mary inside changing and he wants to come down the stairs.”*

M: *"It's very hard for it to be an elevator at the same time. If someone is changing and someone else wants to go up or down, that's not possible because someone is changing."*

Using extreme situations

By depicting extreme situations the students were also able to identify the negative and positive consequences of proposed solutions. By depicting a worst case scenario, as in the example below, the students were able to in turn devise a solution to the problem identified in the scenario:

L: *"What do I do if others are resting and the baby is crying?"*

J: *"They could have on board child facilities like a child area or something down the back."*

Conflicting forces

Using pairs of conflicting forces was another tool that helped the teams to uncover the conflicting needs of users. Some pairings uncovered by the teams were: size vs. personal space, light vs. darkness, noise vs. silence, introvert vs. extrovert and functionality vs. flexibility. An example of using a conflicting force within a scenario, as defined by one team, is where someone may want to sleep while others want to engage in activities that may conflict with that, like talking, moving about or using electronic devices.

Experience prototyping

Experience Prototyping is a term given by Buchenau and Suri (2000) to any kind of representation, in any medium, that is designed to understand, explore or communicate what it might be like to engage with a product, space or system. It is a method that allows designers to experience something directly. This involves role-playing techniques sometimes supported by theatrical props to create user scenarios (Keller and Stappers 2001). The teams found not having direct access to an aircraft and a Crew Rest area difficult and to overcome this built a full scale model from cardboard and using props such as chairs and tables carried out a series of role play and scenario building exercises. The teams enacted various social situations and activities such as sitting, reading, listening to music, talking to a colleague preparing and eating meals and sleeping.

This proved invaluable to identify with users and understand the issues associated with the crew rest. Experience prototyping also enabled the teams to evaluate the ergonomic and physical constraints of the space envelope (see Figure 2).

"It's pretty cramped. You couldn't really stand up. The cardboard is the actual height of the ceiling. So out of four of us we were all above the ceiling height which was a big issue."

Experience prototyping, through the role play of scenarios, was also used to test and validate proposed concepts. One team, by trying out a proposed solution in the area of services, were able to reveal flaws with their concept which needed to be redesigned: *"We implemented the kudos point system into our lives. We delegated certain points for favours that we did for each other. This created a competitive atmosphere between the three of us which we believe made the concept a bit too much about competing and not about providing services for each other"*.

Conclusions

The teams did not have direct access to an aircraft with an existing crew rest (these are not standard in large aircrafts) in which to conduct research which limited their understanding of the user's experience. However the scenarios outlined above and the techniques employed to support them: stories and recounting personal experiences, analogies, metaphors, personas, using extreme situations, conflicting forces and experience prototyping compensated greatly for this shortfall. These techniques supported the teams to create scenarios to fully scope out the problem area and uncover, not just issues associated with the physical aspects of the crew rest, but also the deeper emotional and physiological needs of Flight Attendants from diverse social and cultural backgrounds. The scenarios also facilitated the teams to develop and evaluate concepts later in the process. These findings have implications for design education and the techniques described can act as guides and prompts to instil an empathetic approach in studio projects in both design education and professional practice.



Figure 2:
Role play with props to replicate the crew rest experience