

Ethnography in Product Design - Looking for Compensatory Behaviors

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Abstract:

This paper describes the use of ethnographic research to create new products and the innovations that result from observed events. To take full advantage of ethnographic research, the designer must be part of the observation team, because the research can never convey all of the information that is available from the observation itself. Many events occur outside the observation framework, which may be of most value to the designer. The only way he or she can access that information is through firsthand observation. Such observation gives the designer a context to verify assumptions as he or she develops new concepts. The author shares five experiences in which observational research led to innovation in products and product concepts: (1) an experience observing the use of treadmills in the home market, (2) an experience observing daycare children playing with a variety of electronic learning aids (ELAs) for Fisher-Price, (3) an experience observing people working out in a club environment for an exercise equipment manufacturer, (4) an experience working with a company developing a garden sprayer, and (5) an experience observing a retail store for a bar-code scanning company.

Keywords: Product design, ethnography, observational research, user-centered design

Introduction

This paper's function is to present ethnography as a research method for product design. It discusses the value of ethnographic research to the design professional and to the product development process, the importance of the designer participating in the research, and how the research assists problem finding, an important aspect of creativity and innovation (Runco, 1994).

What is ethnographic research?

Ethnography is a description of a social group based on recorded observations of and interaction with individuals and their environments. Observations are descriptive because of the volume of data and are interpretive to make this data useful.

Research is a systematic investigation that establishes knowledge.

Ethnographic research is the attentive observation, the experience, and the systematic documentation of a social group in order to establish knowledge.

Why is ethnographic research important to designers?

Innovation is the successful implementation of creative thought and is important to business success. An important element of the creative thinking process is problem finding, an area where ethnographic research is a valuable tool.

Ethnographic research allows the designer to understand consumers, including how they act, what they want, and what their attitudes, perceptions, and behaviors are. The designer can discover unmet needs and understand the impact of a product within a specific context. Ethnographic research can enable products and services to meet more market and consumer needs, thereby reducing the risks of introducing a new product.

Who does the research?

Now that businesses have discovered ethnography, research firms are being established to provide observational research. Although these firms provide the data, users still have to synthesize the data to discover opportunities and make decisions.

The designer's approach to ethnography is different from the anthropologist's approach. While the anthropologist is looking for generalities, the designer is looking for specifics. The anthropologist is concerned with analysis and avoiding making judgments; the designer is concerned with synthesis and is required to make judgments. The anthropologist looks at prolonged activity; the designer needs information quickly (McCleverty, 1997). The anthropologist is collecting data, but the designer is interpreting data and looking for behaviors.

When possible, the designer who is directly involved in the product or service development should participate in the research. Designers know that they are looking for something; they do not know what it is, but when they see it, they will know. They can see it in the collected data or through firsthand observation, which is always better.

There are clues to opportunities that the designer can look for, such as compensatory behaviors, deviant behaviors, behavior pattern anomalies, and annoyances. Research reports, no matter how complete, will filter out things that are determined to be unimportant or outside the

parameters of the research, but it's often these very things that hold the key to the designer's innovation.

Participating in the observation allows the designer to make better decisions about the design. Nothing can substitute the designer's experience of seeing participants using a product in the context in which it is intended to be used. This is so important that Tom Kelly (2005) names the anthropologist as one of the innovation personas in his book, *The Ten Faces of Innovation*.

How is it done?

Emic and *etic* are terms used in ethnography to describe methods of observation. Emic observation is an insider approach, observing the setting and its members by directly participating in the setting. Emic is not only observing but also experiencing. Etic is a more distant approach, observing the setting and its members as unobtrusively as possible from the outside (Headland, Pike, & Harris, 1990).

Both approaches are valuable to the designer, but if one project involves both approaches, the designer should take the outsider's approach before the insider's approach in order to observe the setting and its members acting naturally because they are not aware that they are being observed. Then if participation, conversations, or interviews are part of the observation, they can be done without affecting the outsider's uninhibited observation.

The best tool for ethnographic research is the designer's knowledge, vision, and memory. Cameras, voice recorders, and notebooks are also reminders of what is observed. A video camera is a valuable tool that allows an independent researcher to focus on the larger context, sketch, make notes, and take pictures while in the environment. Sketches are less obtrusive than pictures, and pictures are less obtrusive than video footage.

What are the results?

The author's has found, over a 29 year period, that observation during the design process is very valuable in approaching design problems. After receiving undergraduate training, it was surprising to learn that not all designers used observation as part of their process. This approach has always been informal but effective. The author's first job after graduation was working for a manufacturer of computer equipment for automating financial institutions assigned to redesign the system, which consisted of a video display, a keyboard, a magnetic card reader, a processor, and a document printer.

One of the first steps in the process was to visit banks and observe the tellers' working patterns, the environment, and the use of the equipment. It was easy to get permission to observe in the banks that had our equipment installed. Tellers were anxious to help make their work easier and more efficient. The results of the observation were simple: space was at a premium, and the equipment was taking up a large portion of the space at each teller station.

The goal was to save space. An arbitrary goal was set to reduce the system footprint by 30%, and we accomplished this by combining components. We integrated the magnetic card reader into the keyboard (a real innovation at the time), developed shared printers, reduced the footprint of the video display, and made the work surfaces more useful.

The existing document printer had a sloped top that made the surface unusable. During initial visits, some tellers were observed to have made makeshift receipt holders out of cardboard that were taped to the top of the printers, compensating for a lack in their environment. This is

called compensatory behavior. The new printer design had a flat top with an optional rack designed to hold blank receipts, deposit slips, and other paper products. The resulting product line was very successful in the market. This first “real world” experience with observational research convinced the author of the benefits of observational research.

The following five case studies demonstrate the effectiveness of ethnographic research for designers.

Case Study 1: Treadmill

A designer consulting for a large exercise equipment manufacturer, Icon Health and Fitness, was assigned a new treadmill. The market was crowded with treadmills, and the designer wanted something to differentiate the new design. The designer conducted an observation of home and club use of treadmills. The designer went with a camera and a sketchbook to observe the use of the treadmills. Data collected from the observation detected a very unusual behavior pattern. People came to the equipment with a variety of personal items, such as water bottles, towels, keys, cell phones, and magazines or novels. They searched the floor for a piece of bent plastic, an aftermarket magazine rack, and put the rack onto the treadmill console with their magazine. They slid the rack to one side and programmed their workout. They then slid the rack back to the middle and started their workout while reading their magazines. During their workouts, users would occasionally slide the reading material to the side to check their time, calories, or distance on the console displays, and then slide the book rack back into place. They did this three or four times during a 30-minute workout. In all, they used the console displays for 5 minutes and the magazine rack for 25 minutes. This pattern repeated itself very frequently in the observation.

One of the design innovations that resulted from this research was a console with a built-in magazine rack in the middle and the controls and displays to the side. This was a simple concept but, up to that point, was not available in home or club exercise equipment. This innovation was not only integrated into the home treadmill, but was also included in every elliptical, stair-stepper, and bike console. This innovation is now standard in exercise equipment.

Case Study 2: Electronic Learning Aids

Fisher-Price tried for a number of years to develop their electronic learning aids (ELAs) category of toys to compete with the very successful LeapFrog and VTech products. The design team was tasked to develop some concepts for unique ELAs. The first step was to understand how these products were used. The design team gathered a selection of Fisher-Price and competitors' products, and with permission from a local preschool and parents of children enrolled in the preschool (the product's target audience), filmed the children interacting with the toys. We conducted filming during the regularly scheduled playtime segment of the daily routine at the preschool in order to be as unobtrusive as possible in the classroom and to avoid disrupting the regular school day.

The team filmed about five hours of preschool children playing with, sharing, discarding, fighting over, and interacting with the toys on different days, but the most important observation occurred on the second day of filming and outside of our research parameters. Recess followed the playtime session at the preschool. On the second day, the students were immersed in the toy research playing with the plethora of new toys when the recess bell rang. The children

immediately dropped the toys and lined up to go outside. The video had been shut off and was being packed up when the teacher took the students out, and one designer wandered out with the students to further observe what was going on. The children were having a great time playing, laughing, running, jumping, and swinging. They were, in fact, having far more fun than they'd had with any of the toys. The teacher was involved in organizing recess activities like Ring around the Rosy, Red Rover, and the like.

The ELA concept based on the preschool observations that was presented to Fisher-Price was an outdoor product called Jitterbug. The product looked like a bug, and when children “danced” with the bug, it would give them a series of tasks to do—such as running, jumping, or hopping on one foot—while simultaneously teaching them about the alphabet, numbers, colors, and cooperation.

Case Study 3: Free Weights

Another exercise equipment client, Weider/Jumpking, asked its design team to design a new set of free weights. The observation conducted in a club environment showed a young female lifting 45-pound weights onto the bench press bar. The weight was heavy and hard to hold. She was struggling to line up the hole in the weight with the bar and eventually used her leg to hold the weight in place. This is called “an annoyance,” a behavior that designers look for while observing.

A series of innovative ideas came out of this observation. The result was a set of weights with a handle on both sides and a lead-in to align the bar with the center hole. The design also included a vinyl “o-ring” to protect the floor and the weight in use and easily communicate the size of the weight. The new design was one of the best selling weight sets that Weider/Jumpking has ever introduced.

Case Study 4: Garden Sprayer

A large design firm was assigned to develop a new line of portable garden sprayers. Ethnographic research concluded that the most frequent use of these sprayers was to kill weeds. The research also showed a very interesting compensatory behavior: the users were making cardboard and tape shields for the nozzle of the sprayer to help direct the spray to weeds and protect flowers and other planted items. These observations led to a garden sprayer with an attachable shield.

Case Study 5: Bar-Code Scanner

A designer was asked to design a vertical barcode scanner for a client. The product requirements document (PRD) from marketing said that this product would always be in a vertical orientation and needed to have a speaker on the front. Marketing had found in past products that the speakers on the side or back were never loud enough and were often covered by other items in the checkout area. The designer could have easily accepted the marketing requirements but decided to observe for himself. What the designer found was a competitor product installed in a Barnes and Noble bookstore. It was mounted horizontally under a glass top. The designer took several pictures of the installation. The problem with the PRD was that with the speaker on the front, it would be right up against the glass top and would never be

heard. The horizontal configuration also required that the front of the product be flat to allow a smooth interface with the glass and a more versatile mounting scheme for both vertical and horizontal configurations. The client changed the PRD to include these changes in the design, and proceeded with the project. This observation did not lead to innovation of was used for verification of an idea.

Conclusion

Ethnographic research is the attentive and systematic watching or recording of somebody or something in order to establish knowledge. This knowledge can lead to innovative ideas that give products an advantage in the market.

The case studies cited in this paper are a few examples of innovation resulting from ethnographic research. Designers need to be trained on how to use ethnography to look for compensatory and deviant behaviors, behavior pattern anomalies, and annoyances. Designers can use this tool for problem finding in order to develop innovative ideas and to meet consumers' needs.

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