The use and evaluation of focus group technique: the undergraduate industrial designer experience

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Abstract

Focus group techniques have a history in market research and social sciences. Though focus groups have conventionally supported new product development, they are typically organised and run by market researchers who then feed only the essence of the results to the designer. The authors are suggesting that in fact a designer could undertake the role of a moderator or co-moderator at certain stages in the designing process.

This paper presents a case study during which the designers themselves (undergraduate Industrial Design students) have prepared, conducted and analysed a series of focus groups. The study concentrated on the development of an ironing system (i.e. iron, ironing board and steam generator). It provides a context for evaluation and critical analysis of the technique. The paper discusses the technique – its benefits and limitations – as expressed by the undergraduate designers.

The authors feel that this technique could be successfully introduced at undergraduate level. Even before this, at A level and GCSE there could be benefits in employing the technique to help pupils and students understand the benefits of gaining insights into the emotive side of product selection. Findings indicate that considerable training was necessary before undergraduates could successfully employ this technique. However, the potential in supporting new product development was demonstrated to be substantial.

Introduction

A successful product fulfils the consumer’s needs. It is very important that designers recognise that these needs go beyond the utilitarian and functional to include the aspirational, emotional and cultural. Understanding such needs requires techniques and methods that elicit less tangible data to increase the designers understanding and empathy with the user. It follows that undergraduate designers need training and experience of techniques to elicit this broad range of user needs. The additional effort spent to research

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1 The authors wish to acknowledge Lee Adams, Jonathan Bainbridge and Chris Tickle, the undergraduate industrial design students who conducted the series of focus groups used for the case study.
user needs in early product design phases pays off in minimising errors before financial commitments are made, such as building working prototypes or production planning (Baxter 1995). Greenbaum (1998) stresses the importance of involving people from the product design and manufacturing areas into user research when new product concepts and prototypes are being developed.

A substantial part of designing is specifying design objectives, analysing future product functions and considering user requirements. Pereira (1999) hypothesises that “originality may reside in the way we find problems and not in the way we generate solutions” (pp 228). Creative problem solving requires deep immersion into the design task in order to find new solutions. The sudden spark of inspiration cannot appear without contemplating large amounts of data and information to inform the designer of all aspects of the design task (Baxter 1995; Cross 1994). Focus groups can provide increased insight and understanding of the user group (McDonagh-Philp 1999).

This paper introduces focus group technique as one approach enabling the designer to explore user wants, desires and needs. Firstly, focus groups as a technique are explored. Secondly, a case study is presented of three undergraduate industrial design students learning, employing and evaluating this technique over a nine-month period in developing an ironing system. Various findings are presented and discussed with conclusions drawn. The authors offer practical insight and advice to provide design educators at undergraduate and school levels with useful guidelines for exploring and applying this technique. References to additional reading in this field are also provided.

Background

What are Focus Groups?

The conversations in focus groups can ... be a gold mine of information about the ways that people behave and the motivations that underlie these behaviours (Morgan 1998, pp58).

A focus group is a collection of individuals that have been brought together to discuss a particular topic, issue or concern. A moderator (a chair) provides a framework and structure to the meeting, integrating open-ended questions to promote discussion. The method relies upon the interaction between the individuals during the discussion, also referred to as the synergy of the group (Kitzinger 1994).

Focus groups collect qualitative data. They provide detailed insights into peoples’ beliefs and experiences, rather than statistically secured facts. The material gained from focus groups is therefore very different in nature from that obtained by quantitative methods. In comparison to surveys, focus groups allow more flexibility in the way questions are asked. The method is more open-ended, because the content of the discussion might take unexpected directions or open up new topics. Accordingly, answers vary and standardisation of the data can be problematic. Moreover, focus groups require a largely subjective data analysis. Focus groups are not suitable where results need to be generalised over larger populations, but where in-depth knowledge about the reasons for peoples’ opinions and behaviour is required (Morgan 1998). The validity of the data can
be increased by *purposive sampling* – which is selecting participants that belong to specific user groups (Erlandson et al. 1993).

In comparison to other qualitative methods, such as observational analysis or one-to-one interviews, focus group methods provide a different kind of data, but are an efficient way of gaining an overview of opinions at a detailed level. Focus groups can be more efficient than interviews as they avoid overlap and repetition (Morgan 1997). The method is used traditionally by social scientists, market researchers and psychologists. Since the 1980s the method has become very widespread and popular, and has been used for a range of different applications – e.g. in the health field, but also in demographic studies, for planning and evaluating programmes of public organisations or political campaigns (Morgan 1998). Focus group technique is very adaptable. Morgan (1998) classifies four main areas of applications: (1) academic research, (2) product marketing, (3) evaluation research, and (4) quality improvement. Likewise, the technique can be applied to various stages during the project (see Table 1).

Table 1: The range of application fields for focus groups (Morgan 1998, pp 14)

<table>
<thead>
<tr>
<th></th>
<th>Academic Research</th>
<th>Product Marketing</th>
<th>Evaluation Research</th>
<th>Quality Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem Identification</strong></td>
<td>Generating Research Questions</td>
<td>Generating New Product Ideas</td>
<td>Needs Assessment</td>
<td>Identifying Opportunities</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>Research Design</td>
<td>Developing New Products</td>
<td>Program Development</td>
<td>Planning Intervention</td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>Data Collection</td>
<td>Monitoring Consumer Response</td>
<td>Process Evaluation</td>
<td>Implementing Interventions</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>Data Analysis</td>
<td>Refining Product or Marketing</td>
<td>Outcome Evaluation</td>
<td>Assessment Redesign</td>
</tr>
</tbody>
</table>

Typically the technique involves a moderator (a chair) and a group of between 6-8 individuals chosen on specific criteria to suit the particular topic or task. Duration of discussion can range between 45 minutes and 2 hours. A schedule of open-ended questions provides the framework. The moderator must be able to recognise relevant issues arising that may not have been previously identified and encourage exploration in that direction. There is no one formal prescribed protocol, a number of focusing techniques can be employed to encourage the individuals to relax, participate and contribute in an open-minded way. The environment needs to be conducive. Often such groups will run in an evening due to individuals’ availability. It becomes important to provide a relaxing yet productive environment. Typically, light refreshments are provided along with a nominal subject fee (e.g. £25 for a three-hour research session).

The moderator may wish to integrate a variety of activities such as product handling, visual evaluation, product personality profile, brainstorming, nominal group technique, and/or word association. These aim to stimulate discussion: product handling allows the individual to directly handle products (existing or models); visual evaluation simulates catalogue purchasing and restricts the individual to purely visual data; product personality profile encourages the individual to imagine a product as a person, with a job,
lifestyle, gender etc. This provides an insight into the individuals perception of the target user, as used by marketing research departments of major manufacturers. It is beneficial to combine focus group discussion with other activities such as filling in questionnaires, both to vary the tasks people engage in, and to enable different modes of data collection. The examples above are not exclusive, within each session the moderator may develop unique tasks and activities accordingly.

Data collection and capture is normally carried out via a range of methods (triangulation) such as video tape, audio tape, photographs, feedback forms and/or notes. Analysis of this data follows qualitative research techniques (for example Glaser and Strauss 1967, Hopkins and Bollington, 1989). Normally all these stages are conducted by trained moderators and then the data is fed to the designer or team.

The Case Study

Aim

The aim of this 9-month design project was to provide a range of ironing products (i.e. iron, board and steam generator) for the British domestic appliance market. The research element aimed to employ, explore and evaluate focus group technique in the support of new product development.

The project, which ran from September 1999 to May 2000, was based around the experiences of three students on Industrial Design and Technology (BA/BSc Hons) programmes at Loughborough University. The project was carried out in addition to their undergraduate experience and training.

Throughout the nine-month project, the designers were in regular (daily/weekly) contact with the major author. On completion of the project the designers took part in an evaluative focus group with the authors. This provided the opportunity to explore their experiences and expand the authors’ understanding of the undergraduates’ reflections on employing the technique, the impact on their design project, and the growth in their designerly thinking.

Location

Three focus group sessions were conducted (in Dudley, Bolton and Nottingham). All were carried out within the home environment of the students, specifically the living rooms. This was appropriate as mainstream domestic appliances were being evaluated. In each case one student would provide the location and hospitality, whilst another student acted as the moderator, leading to a delineation of roles.

Personnel

All three students were present at each focus group session. Each group consisted of eight participants of the public, selected by the students on the basis of local knowledge. The selection criteria were (a) homeowner (b) female (on the insistence of the industrial sponsor) and (c) aged 25-55 years.
**Process**

The nine-month project centred on three focus group sessions. Each of these sessions used a standard protocol. Before any of these sessions were conducted, the students received training in moderation techniques (e.g. chairing the discussion), questionnaire design (e.g. visual and product handling forms for feedback collection), moderation draft writing, and product evaluation. All three students also attended focus group sessions prior to commencing their project as observers. A reading list (see recommended reading, below) was provided – as preparation to ensure that a thorough understanding of the technique was gained.

The three key stages planned were:

1. Explore existing products and increase understanding of user experience;
2. Present participants with concept generation/ideas to elicit feedback at this stage and to select the range of concepts to be developed further;
3. Refine selected concepts.

The protocols used in each of these stages were similar, but were responsive to the need of each stage. For example, the initial focus group session involved a more in-depth discussion than the later stage that concentrated upon the evaluation of three-dimensional models and renderings. In each case specific objectives were identified. These objectives were used to generate a schedule of issues to be raised for discussion. This schedule was then translated into a practical sequence of events (e.g. the group met, introduction given, etc). The practical sequence of course needed appropriate logistical planning (e.g. location, time and hospitality).

**Findings**

The three student designers were debriefed in the form of a focus group. A schedule of basic open-ended questions was prepared. These were deliberately general and the students were encouraged to elaborate. Notes were taken for analysis. The basic questions were to check the students’ perceptions of the techniques, the impact on the team, personal experiences, perceived benefits and limitations, impact on designing process and output. The authors also made observations on performance of the students over the nine-month period.

**Student General Perceptions (the numbers will be referred to in the discussion section)**

1. The students recognised they needed to be very sensitive to non-verbal communication and behaviour. For example, a participant picking up a product and quickly putting it down indicated a negative response. No words were exchanged. Intervention at this point with appropriate supplementary questions could elicit why the participant reacted to the product in that way.
2. Similarly, students recognised that positive feedback on some element of a product could be very easily missed or overlooked. Typically this might be a very short exclamation.
3. Groups conducted in a home environment appeared more relaxed but lead to lessening of formality, which at times proved problematic. Homes offered limited space to layout a range of products.

4. It was evident that developing a good social environment paid dividends in terms of participant interaction and response (e.g. hospitality).

5. The students noted the recommended reading was useful and provided support throughout all the sessions.

6. The technique of product personality profiling was initially perceived as difficult, but later the students thought that once the group was responding quickly (almost subconsciously) the response was ‘brilliant’ — in comparison to conventional questioning techniques.

7. Students recommended that focus groups should involve participants who do not know each other. In this case study this was not always the case and they experienced people that did know each other being safe with their responses (e.g. polite to the host, social hierarchy).

8. Students did not feel it was design by committee: they did not feel obliged to adopt ideas put forward by the group. They felt in control and were able to feed their ideas to the group.

9. They felt they received a better response when they were more formally dressed, “suited up”.

Limitations

10. Students believed that they could not have employed this technique without appropriate training.

11. They recognised considerable time was needed to prepare for the focus groups (e.g. administration, preparing boards, models).

12. The time taken to analyse data from the group was significant.

13. Data collected was mainly qualitative and required considerable expertise to analyse.

14. In some cases a group participant with expertise tended to dominate the discussion.

15. The students felt that their focus group work was not accepted by all academic staff. One member of academic staff felt the technique fashionable rubbish.

Benefits and Impact on Designing Process and Output

16. The students raised the concept of trigger words or phrases from the group. These could be described as words, which trigger new ideas in the designers’ mind. These were not necessarily directly linked to the trigger itself (e.g. one participant suggested adding an aromatherapy feature to a iron. The designers saw the generation of a pleasant smell as a trigger: the participants were looking for a relaxing experience and this could be generated by means other than aromatherapy. This triggered more creative thought and solutions that did not in fact involve aromatherapy but enhanced the final design.)

17. Students reported that the focus group output definitely helped, supported and influenced their designing process and output.
18. Students also considered the experience also developed their social skills and sensitivity as designers (involving aspects that cannot be formally taught in a course but is vital in user-centred designing).

There was complete agreement between the students that despite the limitations of this technique, it certainly enhanced their project: *If I were doing another project I would want to use it* (focus group technique). They were very clear that they saw the use of focus groups as a highly formative experience and one that will be of benefit to them as designers in the future.

**Discussion**

The case study appears to support claims made for focus group techniques in relation to providing insights into the emotive and aspirational aspects of user responses. In addition it was evident that more specific feedback on usability was gained (e.g. “increase the radius here”, “change the colour”). The students did not feel focus groups amounted to ‘design by committee’; they had control [8].

Proponents of focus group techniques have suggested that the synergy of participant interaction increases the potential for value. The case study appears to support this though the students noted that (a) it was important to avoid including ‘experts’ who may attempt to dominate the discussion [14] and (b) that a degree of formality in organisation and attire by the designers appeared to improve the response of participants [9, 3]. Synergy was also enhanced by appropriate social environment and atmosphere [4]. It should also be noted that group participants who are unfamiliar with each other led to more productive discussion [7]. Where participants did know each other social etiquette tended to restrict and limit responses.

The students confirmed the difficulty in analysing the qualitative data generated [13] but, felt the outcome was of great value to them in their design work [17]. They gave the examples of the concept of trigger words [16], which they were surprised to discover. This was also a new insight into the use of the technique, as the authors had not experienced this concept in practice or through the literature before.

The designers reported the qualitative data gained to be very helpful in relation to the design task that they were working on. They noted they needed to build experience in identifying behaviour that may be fleeting or not immediately obvious [1, 2]. The specific technique of product personality profiling was viewed by the students on reflection as a very valuable technique [6].

The case study introduced a new element to focus group techniques: the use of the designer as moderator rather than a specialist moderator (non-designer) conducting the session and feeding the outcomes to the designer/design team. The students confirmed that after appropriate training [5] they felt it valuable to be a part of the focus group activity [17]. It added to their personal set of skills [18]. They recognised that the activity was time consuming [10, 11, 12]. The recommendation of the authors would be that focus groups should be organised and run by trained and experienced moderators who will probably come from market research or social sciences. However, designers should be aware of the potential of the technique and be capable of co-moderating a focus
group. This would enable a more design-focused and immediate follow-up to issues that may arise, as a non-designer moderator may lack the direct insight into the design process. Active involvement of designers into the research ensures that design opportunities are not missed (Clay and Clayburn-Cross 1995).

If designers should be made aware of focus group techniques the question arises when and how? This can be seen at several levels. Firstly, general awareness of the techniques is advisable (amongst other design research methods), so that a designer can refer to findings. Secondly, the trainee designer could be given specific training in focus group techniques, possibly including direct experience. This may operate at an undergraduate level, or indeed school/college at A level or GCSE. Students at any of these levels could partake in focus group activity as either a group participant, an observer or as the moderator. They could then practice the collection, collation and analysis of data. At a simple level in a school, a class could provide the environment (i.e. group participants, observers and moderator) in looking at design opportunities, such as a GCSE or A level design project. As students gain experience this could be extended by operating outside the school/college environment, for example, they could conduct focus group activities within domestic homes, social clubs, homes for the elderly, hospitals etc. The authors would like to explore the pedagogical issues involved in further papers. It must also be appreciated that introducing techniques such as focus groups into Design Departments at school, college or university level, may meet with a level of resistance from some staff who only feel comfortable with quantitative approaches [15].

The focus group process can be used to provide on-going feedback during a whole project, rather than simply front-loading it with market research data. Evidence gained can be used in design decision-making, thus, improving the user-centredness of the design. Increased involvement by designers in the preparation of moderator’s drafts, the pre-agreed questions, can lead to more insightful user feedback (Butler 1986). A direct contact between designer and selected users opens up opportunities to retrieve valuable information. Likewise, the vocabulary and language of the user is of particular value to the designer, because it helps to gain a much deeper understanding than a market research report.

Focus groups suit the iterative design process as they can be applied at various stages. They are useful for the original determination of objectives by specifying user needs. They can be used at a later stage for generating user views leading to ideas for product styling. They can be applied equally well to the evaluation of prototypes. Hence, the effort for training designers in using the method can be justified by the prospect of using focus groups as a consistent complementary method through iterative design, and so passing on information directly from one stage to another.

As designing is a multi-disciplinary activity, communication is vital. Training at undergraduate level can prepare designers for design research methods. A recent study highlighted the attitude of recently graduated design practitioners that consider themselves as “poor researchers and now view researching as an important aspect of design education” (Garner and Duckworth 1999, pp 94). These findings support the development of design research training to enhance the designing output at of design students at undergraduate level.
Conclusions

To conclude, the case study indicates that there are considerable benefits to be gained from training undergraduate design students (and possibly school and college level) in focus group techniques. Though the technique is time consuming, it is important to recognise the less obvious benefits in terms of the designer expanding their experience and empathy for the users. Most design training involves student designers working with clients, usually manufacturers. Such training rarely insists on students working with end users. From this study the authors conclude that such activity would be beneficial and also that involvement in focus groups could help develop the designer in professional practice.

The authors suggest that an individual designer has an *empathic horizon* (McDonagh-Philp and Denton 2000), which can be expanded using appropriate techniques and methodologies (Wengraf, 1990). This horizon could be defined as the individual’s range of understanding of user experiences in different contexts. For example, can a white, middle-class, male, able designer design effectively for an elderly disabled person? The answer is yes, to a degree, however, by employing focus group techniques described above the designer can begin to expand that understanding and horizon, and design more effectively in that context.

**Recommended Reading on Focus Group Methodology**


**References**


Kitzinger J (1994) The methodology of focus groups: The importance of interaction between research participants. Sociology of Health and Illness, 16, pp. 103-21.


