

Using Focus Groups to Support New Product Development

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Developers of new products are concerned with responding to and satisfying user needs. Products do not exist in isolation; they serve needs beyond assisting with particular tasks. Recognising that less tangible factors may contribute to product success in the market place has led to the development of a range of techniques and approaches to support the developer in eliciting user needs. These needs include the aspirational, emotional and spiritual. A design culture developing towards design-research is having a positive impact on new product development approaches. The emerging paradigm shift from the traditional role of the designer - creating new artefacts and educating the user - towards a '**User-Centred Design**' approach aids **evidence-based design decision making**.

The authors are developing '**Focus Group**' techniques specifically targeted at the product developer. Focus Group discussion enables the product developer to gain **direct contact** with potential users of products. Based on four years of research, a current project involves developing a protocol of a user-centred design approach for **small domestic appliances** (i.e. kettles, toasters and coffee makers), and a **practical guide for product designers**. The technique has been applied alongside traditional design activities (e.g. concept generation, product analysis) to support the development of a diverse range of products based on Focus Group findings. These have included ride-on lawnmowers, kettles, toasters, coffee makers, irons, and baby's cots. The technique was employed to elicit user (purchaser and consumer) needs beyond the tangible utilitarian functional needs and considerations. Through discussion with users, the designer can gain insight and increase understanding of the users' experiences, aspirations and needs.

This article will highlight the benefits of this technique, its drawbacks and offer practical advice for anyone wishing to conduct a Focus Group discussion. To date, there exists very little, if any, material written for designers. The majority of the literature is written by and for social scientists and marketers. More recently, a stigma to a potentially useful tool has been caused through its use by politicians which has produced an adverse affect on the technique's popularity. The majority of Focus Groups conducted for industry tend to be run by non-designers, normally professional moderators (chairs). By relying upon "non-designers" to gather data, design opportunities may be overlooked. This article aims to offer practical advice based on the experience gained through the use of Focus Groups by the authors.

What are Focus Groups?

Focus Groups involve gathering target users together for a relatively informal discussion on a specific topic or issue. A "Chair" (also referred to as a moderator) promotes the discussion amongst the group, while carefully ensuring not to direct, but guide the group through the issues of importance to them. The synergy between the individuals assists in uncovering or highlighting less tangible issues. This provides an opportunity to increase understanding, awareness and empathy with the user group.

The group of users, brought together for an **in-depth informal discussion**, will not necessarily provide the answers to specific

queries for the developer. They may contribute towards the discussion around the selection of the design concepts and provide initial feedback. The users will allow insights into their **life styles**, their **values**, their **reasons for choices**, and various pieces of **background information**.

Focus Groups collect **qualitative data**. The content of the discussion might take unexpected directions or open up new topics. Whilst the technique provides a high degree of flexibility in the way questions are asked, answers vary and standardisation of the data is not the focus of the research. The data provide detailed insights into peoples' **beliefs** and **experiences**, rather than statistically secured facts. The **validity** of the data can be increased by applying purposive sampling - which involves selecting participants belonging to specific user groups.

Focus Groups encourage communication and provide insights into "**how others think and talk**". Designers cannot, from their own personal perspective, hypothesise about the experiences and preferences of different user groups. Focus Groups supply an efficient way of gaining **an overview over various opinions at a reasonable level of detail**. Focus Groups provide large amounts of concentrated, well-targeted, and pre-filtered data in a short period of time.

Focus Groups should be used for people's needs that are poorly understood, because the discussion between people provides a variety of useful data. For instance, Focus Groups provide reasons for individual opinions, and experiences. The technique is therefore ideal for early, exploratory design stages - to **specify design objectives**. Focus Groups might uncover disregarded product functions, problems of the daily use of existing products in a range of environments, the current characteristics in cultural perceptions about style and fashion, or background stories that help to visualise the user's activities and needs. The technique provides instant access to the data collected.

Users might not be aware of all the aspects regarding the use of products, or their own preferences. Focus Groups are suitable to retrieve data that is not readily formulated or knowledge not thought out in detail. They provide depth for habit-driven topics, for example, "unconscious routines" (such as the way a person grips a kettle's handle). The technique can be used to investigate complex behaviour and motivations, and to uncover subconscious notions. Through discussion, participants become more explicit about their needs.

Why use Focus Groups?

The success of a product is not only substantiated by the decision of customers to purchase it, but also by the satisfaction and pleasure gained through its ownership. Besides the requirement of adequately performing tasks, products fulfil other functions - based on cultural, social and emotional needs and aspirations. The designer needs to be

aware of these **emotional responses** in order to create products with which users can identify and respond.

Designers need to widen their empathy with customers and move beyond the ideas of existing solutions. This requires the consideration of user needs at the earliest possible stage of a product's development, before fixed ideas for solutions to the product's design problems have been established. The additional effort spent to research user needs in the early product development phases can pay off by eliminating errors before financial resources are spent, such as building working prototypes or production planning. When new product concepts and prototypes are being developed, the importance of involving people from the product design and manufacturing areas in user research is well established. Whilst quantitative data is important to gain a current picture of the market, qualitative research is required for product concept development processes.

Identifying and developing new concepts requires detailed knowledge about the use of the product and the user. *"The creative act must be an immersion into the situation of use, a truly felt empathy, not because we voluntarily acknowledge the user but because we need that connection in order to create"*. The ever increasing consumer culture will require designers to *"get under the skin of social, lifestyle and user needs"* is forecast by reviewers.

A substantial part of product concept development involves specifying the product design objectives, analysing future product functions and considering user requirements. *"Originality may reside in the way we find problems and not in the way we generate solutions"* is hypothesised by one reviewer. Creative problem solving requires deep immersion in conceptual thinking in order to find generate new ideas. The sudden spark of inspiration cannot appear without contemplating large amounts of data and information to inform the designer of all aspects of the resultant design tasks.

On receiving the Design Brief (sometimes referred to as the 'Product Specification' or 'User/Market Requirements'), the product developer needs to become immersed within a product type, environment, problem area, and user group. Direct access to the target user can provide relatively immediate means to expand understanding of the Design Brief and context. Depending on the level of expertise, experience and working knowledge already held by product developers, the Focus Group contact would either expand upon, or confirm, their existing understanding.

Designers may be particularly suited to address the questions to users that are of most relevance to designing. Likewise, the vocabulary and language of the user is of particular value to the designer, because it helps the product developer to gain a deeper understanding.

The data from Focus Groups are in the form of recorded "conversations" with varying degrees of structure. The data analysis can be a complex process. A final report is the means by which the findings are communicated, but the actual process of analysis is where the learning takes place, leading to increased empathy and understanding.

When to use Focus Groups - the role of Focus Group research in designing

Focus Groups may be utilised for a variety of new product development projects **prior to initial concept generation**. This enables the product development team to become immersed in the user experience prior to the designing process. Once the concept

generation stage has begun, preconceived design solutions may cause barriers to effective new product development. Therefore, employing Focus Group activities as early as possible in the product development process provides evidence on which to base the initial concept generation.

As Focus Groups can also be applied at various stages of the product development process, they particularly suit the iterative nature of the design process. They are useful for the **original determination of objectives by specifying user needs**. Focus Groups 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 product developers in using the technique is justified by the opportunity of using Focus Groups as a complementary technique to the iterations involved in the Design Process, and thereby passing on information directly from one stage to another.

Planning the research

Before conducting any research it is important to be clear about the objectives of a Focus Group research study. The purpose, the required outcomes (e.g. specific concept design, format of research report), the target user group, and so on, need to be clearly identified. The time scale needs to be determined. Although the different stages follow each other in a linear sequence (planning, recruiting, moderating, analysis), they can overlap (see Figure 1 for an example).

	week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
focus group activity																	
prepare contents																	
recruit subjects																	
organise sessions																	
conduct focus groups																	
data analysis																	
design activity																	
concept generation																	
produce 3D sketch models																	
concept selection																	
concept development																	
concept refinement																	
produce appearance model																	

Figure 1 Time plan

Before beginning the research study, it is important to decide how pre-defined the structure of the sessions should be, as this influences both the formulation of questions and the **moderator style** to be chosen. At one end of the spectrum the **discussion is well controlled and centred on the topics** provided by the moderator. The participants are kept on track to answer a list of predetermined questions within a well-defined time scale. At the other end, priority can be given to the **interests of the participants and the discussion can be left to flow more freely**. The degree of structure depends largely on the goals of the research. The more exploratory the study is, the fewer questions need to be predetermined, and the more scope can be given to the aspects that emerge as important to the participants. This also means that the outcomes will be more variable, comparison between groups becomes more difficult, and more groups may be required.

The discussion can be conducted using a compromise between the two approaches, or using a funnel approach. It moves during a session in several stages from broader topics to more specific questions.

For new product / design research, an iterative approach is recommended that progresses from a stage of broad exploration of the product requirements at the beginning of the project to more design specific enquiries later. Instead of running a series of identical Focus Groups, the content of the sessions is kept variable. Each stage consists of only one or two sessions, whilst one stage directly informs the next one (see Figure 1). So the first Focus Groups are conducted with a very low degree of structure to explore user needs at a very open level, whilst the last groups of the project should be focused much tighter on the evaluation of concepts. The first sessions are more discursive, while the following ones are conducted at strategic points in the product development process. This is due to the initial Focus Group discussions concentrating on general issues, whilst the latter sessions focus upon concept selection, development and refinement. An example of Focus Group sessions timing may include:

- **Focus Group 1** (Pre-design) may include general discussions covering user experience, task, user environment, use of materials and existing products.
- **Focus Group 2** (Concept Generation/Selection) enables the developer to present their understanding of the user through the presentation of initial concepts, and to gain feedback (e.g. concept rating).
- **Focus Group 3** (Concept Development) provides the opportunity for user responses to developed concepts and gain feedback for further refinement.
- **Focus Group 4** (Concept Refinement) provides a final opportunity for user testing and evaluation of concept models. At this stage a new user group can also be used to overcome any biased views that can develop by the original Focus Group team.

Times and locations for the sessions have to be prepared well in advance before starting to recruit participants. Likewise, the length of the sessions, the number of participants per group, and the activities involved should be known to inform participants. A time duration of **90 minutes for the discussion** is recommended. Traditionally, Focus Groups have involved around **8-10 people**, though smaller groups of **6-7 participants** have been found to be more suitable. Moreover, to motivate people for evening sessions was found to be difficult - hence running two identical sessions on Saturdays was found to be preferable.

Developing a moderator's guide

The guide is planned beforehand for the benefit of the moderator - to ensure the research objectives are met. The moderator's guide determines the structure of the session, including the following:

- Objectives of the session
- Different topics to be covered
- Questions to be asked
- Intended flow of the discussion
- Prompts to encourage discussion
- Visual aids and external stimuli to be used
- Duration allowed for each activity.

It is useful to combine Focus Group discussion with other activities, both to provide varying stimuli to the participants and to gain different types of data. We often integrate product evaluation (visually, product handling) into Focus Group sessions. This may vary depending on the stage of the product development process and the objectives of the particular project. There may be occasions where no product samples or prototypes are available and the main task will be the discussion to retrieve initial ideas for the project. On other occasions (at later stages during the project) the evaluation of prototypes will be the main purpose of the group. Hence, activities and length of sessions may vary substantially. Conducting **3-hour sessions** is recommended - combining product evaluation and Focus Group discussion.



Figures 2 and 3 Product Handling – feedback being captured in booklet

Typically, the session may include the following:

- **Initial gathering of group** - time is given to participants arriving and mixing for a few minutes. This enables the moderator to identify dominant and non-dominant characters.
- **Introduction** - to clarify the purpose of the discussion and associated activities (e.g. product handling) and to alert participants to recording devices (e.g. video camera). Consent forms and schedule are explained.
- **Product handling** - using visual questionnaires in combination with product images, followed by functional questionnaires in combination with product handling and a brief discussion.
- **Warm-up** - short exercise(s) assist in participants relaxing before the discussion.
- **Discussion** - Focus Group and associated activities (e.g. product personality profiling).
- **Debrief** - opportunity for participants to provide views that may not have been expressed earlier.
- Moderator brings the session to a close.

The moderator's guide formulates the nature of the questions - it establishes the amount of control given to the moderator over the direction of the discussion, and the scope and openness of the conversation. Most importantly, the questions have to be formulated so that they can be easily understood, using common terms and words. It is important to design questions that encourage participants to express their thoughts

(e.g. instead of "Do you like this product?" ask, "What do you think (or feel) about the product?"). The questions should focus on the research aims and should not be too broad (e.g. instead of "What do you think about the design of kettles?" ask, "Are you content with the range of kettles currently on sale?"). Likewise, it is important to avoid influencing the discussion through evaluative terms or too specific questions. It is useful to retrieve personal contexts and experiences, and avoid drifting into generalities. The questions should be directed in a way to promote group discussion. The members of the group need to be encouraged to direct answers not at the moderator, but to interact with each other. In order to create discussion it might be useful to prepare ideas that generate some controversy.

Table 1 Example of a moderator's guide

Date: 29.09.00	Moderator: Deana	Client: EPSRC	No. Participants: 8	
Focus group Number: 4	Duration: 90 minutes	Location: Department of Design and Technology		
Moderator's draft			Visual Aid	Time (mins)
What are your views on small domestic appliances? (A warm-up question intended to seek general opinions and views.)				5
What are your thoughts on the selection of products currently on the market? (Exploring users perceptions of the range available to them.)				5
I would like you to consider these following items. Please place them into appropriate groups. Now tell me about how you feel about these various products. (Responses to individual products were now sought. This was supported by the handling of the actual products. Moderator to explore the range of types of response (e.g. emotional and practical).)			5 kettles from different manufacturers	10
We are going to have some fun now. Choose a product and imagine it has a personality. Please describe it to me. (Projective technique used to elicit emotional responses to products.)				10
How would you improve products? (More analytical response sought.)				5
We have come to the end of this activity. Do any of you have any comments to add that you may not have had the opportunity to express earlier on? Your views are very important to me. (Opportunity for users to express any other points that may have occurred to them during the session.)				10
Many thanks. We are now moving on to the next activity.				2

The sessions should not try to cover too many, or too wide a topic. It is useful to include a several "warm-up questions" to familiarise the group with the subject matter. Breaks need to be provided for longer sessions. Similarly, changing the activity will keep people interested (e.g. questionnaires, product evaluation forms, exercises using drawing, re-arranging, grouping of ideas etc.). The flow of ideas can be greatly improved by incorporating visual aids. External props and stimuli (i.e. models, sample products, slides, pictures,

videos, presentations and prototypes) need to be prepared beforehand. Participants should not be overloaded with material. Likewise, it should be avoided to be over ambitious with the number of tasks and exercises required of participants per session. Participants may be unfamiliar with form filling and voicing opinions in a group situation.

Recruiting participants

Depending on the goals of the project, the participants have to be chosen carefully through **purposive sampling** (as opposed to random sampling for surveys). If the product is targeted at a particular user group, then the participants have to reflect these criteria to obtain valid information. Likewise, the participants have to be knowledgeable about the topic, and should be interested in talking about it. Moreover, to ensure that participants are compatible, the composition of the group should not be too wide. They need to be comfortable in talking to each other, share a similar knowledge and background to encourage sharing of personal information as well as deeper and more detailed insights. The group should be sufficiently homogenous. On the other hand, there may be situations where contrasting opinions can generate discussions and new insights. Experience shows that it is advisable not to mix different genders (e.g. males or females) and keep the age difference to a minimum (e.g. 35-45 year olds). As the focus of the study becomes tighter, the selection criteria have to become more rigid.

Having determined participant criteria (i.e. age group, gender, occupation, income, use of particular products, home ownership), a strategy for recruiting people needs to be developed, including how to locate and contact people, or whom to give the task to (e.g. designer, assistant, recruitment agency). For instance, advertising in local papers, using web based newsletters, word of mouth and other avenues of contact with potential participants may be necessary. Sending out screening questionnaires to selected parts of the population may be necessary. If available, lists of suitable candidates can be used for contact through e-mail or telephone. It is important to make sure that all people contacted meet the criteria. Recruiting requires the preparation of screening and invitation scripts and determining follow-up procedures that will ensure attendance (e.g. prior to the event telephone calls, confirmation letters).

Practical Considerations

The preparation of Focus Group research requires variety of different activities, which demand a considerable amount of time and effort. Most importantly, participants need to be recruited and sessions need to be scheduled. This involves contacting the participants according to the chosen plan and criteria, and clarifying arrangements for the location. The room chosen needs to be comfortable - that is large enough, reasonably soundproof, with sufficient ventilation and temperature control. Professional facilities also provide one-way mirrors. If the material needs to be shared between several people, then a video recording should be an appropriate tool. The type and amount for fees and refreshments for participants need to be determined.

All necessary equipment and material need to be prepared in time. This includes:

- Clarifying arrangements for recording and presentation equipment;
- Developing questionnaires (i.e. product evaluation questionnaires, re-screening questionnaire);
- Preparing external stimuli (i.e. drawings, photos, slides, concept models, prototypes, product samples);
- Providing name cards or badges;
- Providing writing supplies (pen and paper; we prefer providing a wire bound folder containing all the forms, instructions and writing paper for each participant);
- Preparing forms required for payment arrangements.

Before commencing the research it is vital to estimate the potential cost of the project. Administrative costs include telephone use, producing letters, stamps, printing, photocopying, video/audio tapes, scanning, binding, videotapes, batteries, etc. Additional costs for visual stimuli and visual aids may include videos, prints, slides, renderings, drawings, models, prototype and product samples. Attendance fees for the participants and costs of hospitality might vary depending on the types of participants, expectations, time of day, importance as incentive, availability, income level, job classification etc. Another possibility is the provision of a token gift (e.g. bottle of wine or book token). The participants need to be made comfortable by providing food (e.g. light refreshments: coffee, tea, biscuits, sandwiches). There may be travel costs for participants and/or moderator. Room rental and other hire charges need to be considered (e.g. video recorder, slide projector, multimedia projector). Services are needed for tasks such as reception, hospitality, assistance, presentation, recruiting, administration, and preparation of materials, receiving people, serving food. These might require additional staffing. There is an option for using a recruitment agency. Moreover, indirect costs are not to be forgotten - due to the time spent for preparation, execution, analysis, and report.

Prior to the session it needs to be co-ordinated when to feed participants, and whether to permit eating during the session. The consumption of food may hinder discussion, may bring clutter to the table and may interfere with the quality of audio and visual recordings. However, carefully chosen refreshments should not hinder the process but enhance the friendly and informal atmosphere. The requirements for making notes during the session, and the details for producing video or audio recordings, need to be determined. We usually make a video recording. An omnidirectional microphone placed on the table and connected to the camera has produced good-quality audio recordings. It is useful to operate a separate tape recorder, just to secure no data can be lost. Figure 4 shows the ideal layout for a session, using a round table. As these will be rarely available, rectangular table arrangements can imitate the main scheme. The camera should be positioned to be able to capture as much of the faces as possible, because non-verbal communication (e.g. facial expressions, nodding) can be a vital source of information.

When moderating it is important to find an appropriate balance between leading the session and letting it run out of control. It may be necessary to keep the participants interested (although you may find people would have liked to tell you more than the opportunity

they were given). It is crucial to ensure interaction among participants. This can be done by directly asking participants to avoid addressing the answers at the moderator and letting the discussion run without interruptions for 5-15 minutes.

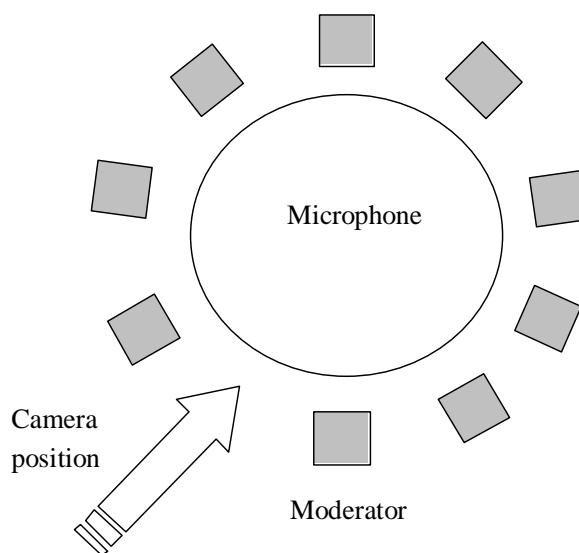


Figure 4 Suggestion for the arrangement of moderator, camera and microphone.

It is not advisable for the moderator to take notes during the Focus Group discussion, as this activity tends to stall discussion and make subjects sensitive to the comments being recorded in this way. Body language can be very helpful for the moderator, to be able to ask a question and then literally pull away slightly from the table. It is even useful to try to avoid eye contact with the subjects. This results in the subjects taking responsibility for the discussion and relieves the moderator from over directing the discussion.



Figure 5 Focus Group Discussion

Moderating also involves preventing dominant participants from having too much influence on the discussion, and ensuring everybody is being involved. Dominant personalities, if not already known, can be identified on arrival during an initial introductory drink. It is also important to start and finish on time, as participants may have other

commitments. Good time keeping also reassures subjects should you wish to recruit them for future Focus Group sessions.

During the session it is always important to make sure that participants are made comfortable and feel their input is valuable. Their name badges or cards should use forenames by which they like to be called. It may be useful to prepare the tags after asking each participant personally for their name during an initial period of filling in questionnaires - this helps to get acquainted with their names and ensures the writing is readable and the preferred name is used.

Feeding the Data into the Design Project

There should be a constant flow of data between the research and the design process. Moreover, the results from one Focus Group stage should be the basis for planning the next one. There is no need to carry out extensive data analysis such as precise tape transcripts or discourse analysis. It is usual to use the notes made during and shortly after the session, and extract the main particulars from the tapes - by categorising ideas, extracting most relevant points and identifying themes, e.g. by comparing two groups. It is useful to store interesting sections of the tape on the computer through video capture - to be used as a quick reminder, and for presentations to others, if suitable. However, it is important to respect the confidentiality restrictions to the participants. The results of the questionnaires can be grouped suitably using a spreadsheet (e.g. EXCEL). It is important not to try and quantify any of the results (as the sample size is far too small). Likewise, care has to be taken not to be biased during the analysis, and to ensure equal consideration of the input from all participants on all aspects.

Summary and Conclusions

For product developers, the Focus Group technique offers a flexible and direct means by which the user can contribute throughout a product development project. The authors advocate this technique being employed - particularly at the pre-design and during the earlier stages of concept generation. Enabling the product developer direct access to the user increases empathy and understanding between the parties. Gaining further insight and knowledge supports the enhancement of the product development process and leads to more responsive products for the user.

To summarise, Focus Groups offer benefits to the product developer in a number of ways, such as:

- Direct contact with users
- Particularly valuable pre-design phase
- Brings 6-8 target users together for an informal discussion
- Provide the developer (designer) with evidence on which to base design decision-making
- Provide the opportunity for associated activities to be carried out before, during and after discussion (e.g. product personality profiling)

As already mentioned, Focus Groups will not answer questions and, in many cases, they will highlight even more questions. However, applying this technique should prove to be a valuable contribution to new product development.

References

This article is based upon research papers by the authors in which a comprehensive list of supporting cross references are given. Copies of these papers are available from the authors.

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