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User-Centred Design and the focus group: Developing the Student Designer's Empathic Horizons

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Biographical notes

Deana McDonagh-Philp *BA MSc MIED* is a lecturer at Loughborough University in the Department of Design and Technology on the BSc/BA(Hons) Industrial Design and Technology degree programmes. An Industrial Design practitioner and design researcher. Member of the Institution of Engineering Designers, the Association of Qualitative Research Practitioners and the Design Research Society. Principle areas of research are gender and design; focus group work; user involvement within the designing process; user-centred design methodologies and emotional domain of Product/Industrial Design.

Howard Denton *BEd MPhil PhD* is programme leader for the Industrial Design and Technology with Education Programme at Loughborough University. His main teaching interests are training teachers of design and technology and the teaching of design practice, gaining considerable experience in programme development in these areas. His main research interests lie in the areas of group and team working in design practice and design and technology education. In addition he has worked and published in the areas of simulation and design, ergonomics education and design and technology teaching and learning at a school and undergraduate level.

Keywords: user-centred design, design methods, focus groups

Abstract

User-centred design is now established as an important aspect of design training. This approach employs the centrality of the user both as resource and focus for design. Developing this the authors put forward the concept of an individual designer's *empathic horizon* (McDonagh-Philp and Denton, 1999). This can be defined as the individual's range of understanding and empathy for user experiences in different contexts. It is suggested that the further a designer can develop their empathic horizon the better they are able to design for given ranges of users.

This paper firstly examines the concepts of user-centred design and individual designer's empathic horizon. The paper makes proposals as to how user-centred design approaches could be employed at a school-level to develop the individual student designer's empathic horizon. Attention will be paid to the concept of development and progression.

Introduction

The practice of design in schools in the United Kingdom has developed considerably in the last 10 years, moving towards an industrial design approach in which pupils consider a range of users and production in quantity. Yet, in many schools design research has not moved on from cutting and pasting 'Argos' catalogues. As educators we must address this issue far more imaginatively and effectively.

It is increasingly recognised that designers need to understand more of the users' response: to go beyond the obvious, such as ergonomic data, towards emotional responses which are central to purchasing and using products. This has led to the development of approaches termed *user-centred* (Wengraf, 1990). The authors consider individual designers to have an *empathic horizon;* the individual's range of understanding of user experiences in different contexts. For example, designers are predominantly male, white, middle-class etc. Can they design effectively for an elderly disabled person? The answer is yes, to a degree. However, by employing various techniques, centred on questioning and working with potential users, the designer can begin to expand that horizon and design more effectively in that context. Such techniques should be adopted at a school level. We must remember we are educating through the medium of design; most pupils will not become designers but developing questioning skills and empathic horizons are valuable educational aims.

This paper discusses the development of techniques to elicit user-responses and considers how these may be developed in a logical manner in a secondary school. User-centred design is defined. Focus groups are introduced as a key user-centred design method. An example is used to illustrate a focus group approach and principles are identified. Suggestions are made on ways in which user-centred design may be developed with pupils and students, expanding their empathic horizons and so potentially improving their design skills and, incidentally, increasing social awareness.

User-centred design Approaches

"User-centred design is an approach to designing that places the potential user as a central design resource. It aims to elicit understanding and awareness beyond the functional needs"

Products satisfy a number of needs: functional, aspirational, emotional and cultural (Lebbon and McDonagh, 2000, Krippendorf, 1990). Current design research methods (questionnaire, interviews, design audits etc.) tend not to be able to illuminate some of these aspects. User-centred design seeks to illuminate those intangible aspects that can be valuable in assisting the designer to meet these needs; hence producing more satisfying products for the user. User-centred design approaches extend the centrality of the user beyond the initial research phase throughout the designing process. Typically, a group of users (a focus group) may be consulted in a pre-designing process, at stages such as: concept generation, concept selection, concept development and refinement.

Application
Focus group methods have long been applied by market researchers, ergonomists, political researchers and social scientists (Kitzinger, 1994, Lansdale and Ormerod, 1994). The method has its limitations (cost, time consumption, sample profile and size) though if these are understood and the method is used appropriately to complement other methods of data collection, focus groups can add value.

To illustrate the above the following example of a pre- design phase application is presented which concentrated on bringing users together to discuss kettles, toasters and coffee makers. This would then be repeated at appropriate stages throughout the designing process. Though the following illustrates a large-scale study, the principles can be applied at a small scale and certainly within a school setting.

An example focus group
The study involved 60 participants (30 females and 30 males) broken into small groups of six to eight to promote easy discussion. Gender interaction effects were limited by making the groups single sex. The criteria for selection were that individuals should be homeowners (and, therefore, likely purchasers of domestic products) and in employment (full or part-time). The participants were randomly mixed in terms of occupation, age, health etc. Groups met in evenings or weekends when the majority found it more convenient.

Figure 1: Focus group activity and discussion.

The guiding objectives for the focus groups were:

- to elicit user perceptions on a range of small domestic appliances
- to become familiar with the language of the user.

These objectives were used to generate a moderator's schedule of questions to promote discussion. Participants were informally met and the moderator conducted a general introduction. A range of products were handled and used to focus discussion. The groups were video recorded, with their agreement. From these recordings it was possible to extract observations on both verbal and non-verbal reactions. These observations were then used to generate categories of response. Each session lasted one hour, a reasonable time for good concentration.

The principles of focus group methodology

The target population must be identified and a relative representative sample selected. Such a sample cannot generate statistically reliable data. However, it can be a rich source of qualitative data that assists the designer in gaining insight, awareness and developing their own empathic horizon. The method attempts to use the potential for positive synergy in group work (Hampden-Turner, 1971, Denton, 1992) to gain more useful data that could be obtained from an equivalent string of individual interviews.

A schedule of questions is designed to promote discussion rather than simply elicit direct answers. There is a considerable skill in chairing such an activity. Logistical issues are important, such as the environment, timing, hospitality, promoting a balanced discussion between all members. The potential data is not simply verbal but includes body language: expressive reactions to existing products for example. Audio/visual recording, therefore, becomes important; this also allows others to observe the session and triangulate observations. Raw data is analysed firstly into basic categories and subsequently refined and coded as patterns emerge.

Discussion

The National Curriculum for **design and technology** states (Key Stage 3, 1e, year 2000 edition) that pupils should:

*"consider … other issues that influence their planning [for example, **the needs and values of intended users**…"*

The user is normally considered through a) the pupil's own, initially, limited empathic skills, b) use of survey techniques such as questionnaires and interviews and c) evaluating existing products. Focus group methods could supplement these approaches at appropriate points, but the technique is complex and needs to be considered within a logical development of user-centred approaches.

The core to all design research is the use of *questions* to elicit data. Questions can generate quantitative data, for example positive/negative or scaled responses (nine out of ten cats prefer Whiskas). Such questions are usually termed *closed.* Questions can also be *open* and generate qualitative responses such as a potential purchaser's initial response to the form of a kettle. Quantitative data is relatively easy to handle and good use can be made of ICT packages to analyse and present data. Qualitative data is more difficult to handle and analyse, though there are well-established approaches established for research in industry and universities (Parlett and Hamilton, 1983). Possibly because of the relative ease of closed questions and quantitative data these tend to predominate in school level design work.

Questions, of whatever form, can be used in questionnaires, interviews and group discussion (including focus groups). The questionnaire is much used in schools to gather user data for design work. ICT can be used from simple to more complex levels, for example generating questions, inputting answers (e.g. optical mark readers) to managing, analysing and presenting data. Similarly the interview can be used. Questions can be closed or open. Interviews with open-ended questions have the advantage of being able to explore an area: to go beyond the questioner's empathic horizon. Such techniques are, however, difficult to manage. An interviewee needs to be relaxed and supported to gain the maximum benefit from the technique. An extension of the interview is the group interview, including focus group techniques. The advantage of such approaches is that a group synergetic effect can be developed which can help individuals analyse their reactions to questions and products and generate a far richer range of data, providing this can be handled effectively.

We can see from the above the indications of a logical system of development. Year 7 pupils need to be shown how to handle simple, closed questions using questionnaires with small samples of friends or family. They should also be shown how to manage the data generated, ideally using appropriate ICT packages.

This should develop into understanding the limitations of these techniques and an introduction to developing open-ended questions where appropriate. These might be used in questionnaires and simple qualitative analysis techniques taught.

Pupils could then be made aware of the value of face-to-face interviews in relation to questionnaires and interviews. These could be practised within a class on fellow pupils as users and purchasers of products. A range of closed and open questions could be used.

As pupils gain experience staff could encourage research on users beyond the classroom. Initially this could be with other, possibly younger, pupils. This may extend to local primary children or people in the family. Pupils would need to be shown how to organise an interview and relax the interviewee to gain the maximum value.

Interviews could be expanded into simple group interviews. Initially, a class involved in individual project work could form a series of small groups. These groups could meet, initially, to brainstorm ideas for user-centred research questions. In this way individual pupils could use group reactions to fuel their own design work. A logical extension is to use such groups at a series of points in a design project. The group can initially provide data at a pre-design phase if all pupils are looking at a similar area. It could then be used to give feedback on initial ideas, development and on the final prototype.

A logical development of the above is to set up an outside user focus group. One group, possibly of only six or so members, such as children in a primary school or a group of elderly people could be used to gain feedback to a whole class at various stages of either individual or group projects at GCSE. The group may either come into the school or operate outside. Pupils in the class could co-operatively plan how the group will be selected, focussed and managed. Similarly they would consider how data would be recorded, analysed and presented. This data would then be available for all, whether acting on individual projects or a group project.

The techniques described above could be developed, from Year 7 on, in a number of ways. Staff could place individuals in pairs. During a project staff could use a lesson mid-point or the last five minutes to get each member of the pair to give feedback to the other on their work so far. Similarly staff could use the last five minutes of a lesson to show the way in which questions can be developed. Homework would then follow this up by pupils developing questions. This would develop to in-puts on the nature of open-ended questions followed by homework exercises. Data management and analysis exercises can be set to develop these skills.

Many teachers may complain that the approaches described above detract from time available for design and making. This is accepted, however, we must appreciate that such approaches can improve the quality and value of design work. Such approaches can also help develop broad life skills, benefiting pupils in whatever area they subsequently operate. We aim to teach design and technology capability but we should also recognise the value of teaching general life skills through the medium of design and technology.

Conclusion

User-centred design approaches have much to offer designers and student designers. The development and expansion of one's empathic horizon is a valuable concept. This expansion is an incremental process that never ends, but will only happen if actively considered. This would start at a school level with simple contexts and methods expanding through the school, university and subsequently within the profession. Educators therefore, whether at school or university level, must be sensitive to the concepts and methods available and able to consider them in their long term planning.

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