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# An Introduction to Usability

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PHILIPS DESIGN



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# Introduction

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## USABILITY

The products that we use in our homes and at work are becoming ever more complex in terms of the features and functionality that they contain. In order that users can benefit from these features it is important that those responsible for product creation ensure that the requirements and limitations of those using the products are taken into account. Indeed, users are beginning to demand this. Whilst at one time usability problems may have been the price that users were prepared to pay for ‘technical wizardry’, this no longer seems to be the case. People are increasingly unwilling to tolerate difficult to use products. Manufacturers have recognised this and increasingly products are being advertised as ‘user friendly’ or ‘ergonomically designed’. Thus, usability is becoming seen as an important issue commercially.

Usability issues have received increasing attention over the last few years. This is manifest in a number of ways. One is the expanding literature relating to usability, including journals, books, and even magazine and newspaper articles. There are also a number of international conferences and seminars dedicated to usability-related subjects. Examples include the Ergonomics Society Conference in the UK and the Human Factors and Ergonomics Society Conference in the USA. However, perhaps the most important reflection on how seriously usability issues are now being taken is the sharp increase in the number of professionals employed by industry who are charged with ensuring that products are easy to use. These include human factors specialists and interaction designers. In addition, product designers and software programmers are increasingly expected to have an awareness of usability issues and to put the user at the centre of the design process.

Indeed, usability may be one of the few areas left to manufacturers where it is possible to gain a strong commercial advantage over the competition. Manufacturing processes have now reached a stage of sophistication whereby any possible advantages in terms of manufacturing quality or cost savings are likely to be marginal. Offering customers ‘user-friendly’ products could be seen as something new in markets where the technical and functional specifications vary little between brands – effective human factors input can, then, mark out a product as significantly preferable to others on the market. Of the factors involved in the product creation process, then, usability issues can be amongst the most significant in terms of influencing the commercial success of the product.

Aside from the commercial implications, lack of usability can have effects that range from annoying the users to putting their lives at risk. Whilst lack of usability in a video cassette recorder (VCR) may result in the user recording the wrong television programme, lack of usability in a car stereo may put lives at risk by distracting drivers' attention from the road.

Usability is not only important with respect to consumer products, but also those used in a professional or commercial context. Nearly all professional jobs now involve the use of computers. This has meant that over the last few years entire workforces have had to become 'computer-literate' or rather that computers have had to become 'user-friendly'. Unless these computer applications are made usable the potential benefits of computerisation, in terms of the effectiveness and efficiency with which businesses can be run, will not be fully realised. Indeed it has been estimated that in the 1980s, in computerised offices, up to 10% of working hours were wasted solely due to usability problems (Allwood, 1984).

Similarly, usability can have important implications for productivity in manufacturing environments. If operators have difficulties with machinery they will not be able to produce as much in a given time and, in all probability, it will be of a lower quality than it might otherwise be.

As mentioned previously, usability issues can have a major effect on safety. Consider, for example, a product for use in emergencies such as a fire extinguisher. This must be easy to use at the first attempt in situations where the user may well be under considerable stress. Clearly, there may be serious consequences if the user has to struggle with it. Similarly, lack of usability has been shown to have been a causal factor in many industrial, domestic and transport accidents.

The importance of usability will be expanded at some length in Chapter 2.

## AIM AND CONTENTS OF THE BOOK

The aim of this book is to provide the reader with an introduction to the issue of 'usability'. In the next chapter, the reader will be introduced to the concept of usability – what usability means in 'lay person's terms' and how it has been defined formally and operationalised.

The third chapter will look at the principles of designing for usability – the characteristics that separate usable designs from those that are not usable. Chapter 4 outlines the elements of a design process which are required in order to guarantee that usability issues are adequately tackled.

The fifth and sixth chapters concentrate on usability evaluation. In Chapter 5, a series of methods for evaluating usability are outlined. Chapter 6 then describes what is required in order to conduct an effective usability evaluation.

## SCOPE OF THE BOOK AND LIMITATIONS

It is hoped that readers of this book will emerge with an overview of what usability is and have a basic understanding of what must be taken into account in order to design for usability and conduct usability evaluations. No previous knowledge of usability issues is assumed and the book should be accessible to all, regardless of academic or professional background.

This is not a 'manual'. Reading the book will not give a person new skills – for example, it will not turn a marketing professional into someone who can design usable products or a computer scientist into an evaluation specialist. However, it should give all readers an awareness of the issues and give those who already have particular skills the knowledge to enhance their effectiveness. For example, those who currently conduct usability evaluations will find many new techniques to add to their repertoire, whilst those with experience of product or software design should be able to apply to their work the ergonomic design principles outlined.

### **WHO IS THE BOOK FOR?**

The book was written primarily for students and those whose profession is connected with the process of product creation. 'Product', as used in this book, is a generic term covering, for example, computer software, consumer products, products for use in the professional environment and manufacturing equipment/machinery. Courses for which the book should be suitable include: human–computer interaction, product design, human factors/ergonomics, information technology, marketing, multimedia and modules on human–product interaction in psychology, computer science and engineering courses. Professions at which the book is aimed include human factors, interaction design, product design, software design, marketing, product management and engineering.