

What kind of assistance do users need?

Matthew Ellison and **James Windebank** investigate questions that software users typically ask and how they affect user assistance design.

We often think we know what our users want from our software documentation and user assistance. Based on the assumption that users prefer step-by-step instructions, our documents are liberally sprinkled with neatly formatted numbered lists and tables. We also carefully describe all the fields and controls that make up our applications. However, do we actually understand why users turn to our assistance? What kinds of problems are they having, do they need guiding through an entire procedure, or are they simply seeking a small fragment of information that will help them on their way?

Based on findings from a pilot study performed at the University of Portsmouth in May 2010, this article reveals the questions that users really ask. It also recommends design patterns and techniques that will most effectively provide users with what they need and enable them to become more productive.

Joint Venture

The following report is the result of a joint venture between Matthew Ellison, an independent consultant and trainer, and James Windebank, a postgraduate student on the MA Technical Communication at the University of Portsmouth, the aim of which is to investigate the kinds of questions that users (with a variety of levels of experience) ask as they attempt various tasks within a software application. The conviction that underlines the study is that the anticipation and understanding of the type of questions that users ask is critical to the design and development of successful user assistance.

Methodology

The pilot study asked 16 participants to tackle three tasks on three different types of software applications. A clear explanation of the aim and required outcomes of each task was provided to each participant, but we avoided giving them any initial information on how to do it. The participants were not allowed to refer to any form of user assistance, and if they had any questions, they were encouraged to ask the moderator (James). Effectively, the moderator took on the role of the Help system and would only answer the specific questions asked. Each participant's session was recorded using TechSmith Morae in three synchronised forms: audio to capture the questions, screen activity, and video of their facial expressions.

Participants

The original sample size was 20 participants; technical problems with the recording equipment reduced the number to 16, eight female and eight male. The target participants were software users with mixed levels of computer expertise. All of them were postgraduate students, and the majority of them were in their 20s.

Demographic survey

At the beginning of each study session, the participants completed a demographic survey to gather the following information:

- Gender
- Age
- Nationality
- Duration of computer experience
- Level of computer expertise
- Prior knowledge of software application
- Familiarity with additional software applications.

Tasks

Three different tasks with varying levels of complexity were devised to replicate typical situations that software users would encounter.

- **Task 1:** This task was based on Microsoft Word 2007. Under the assumption that many users are familiar with MS Word 2007, the task was made complex to challenge the participants, and therefore to ensure they asked advanced questions.
- **Task 2:** The web application Google Maps was used for the second task. The level of difficulty for this task was designed to be in the mid-range between complex and simple. Google Maps is a widely used and predominately visual application and was therefore expected to sit in the middle of familiarity with users.
- **Task 3:** The final task was to use Adobe Flash CS4 Professional. This web-specific application was chosen because it was likely to be unfamiliar to the participants, and for that reason the task was kept simple.

Equipment

- **Hardware:** A laptop with a simple combined webcam and audio microphone was used to record the behaviour of the participants as they carried out the predefined tasks.
- **Software:** TechSmith's Morae software application was selected to record the screen

What kind of assistance do users need?

activity and synchronise with the audio and video. The Morae software is designed for usability testing and user experience research, and provides many ways of analysing and reporting on the recordings.

Data assessment

Once each participant's session had been captured, the recordings were transcribed to collect the following data:

- the categories of questions asked
- the sequence of question categories
- whether each question resulted in successful task completion.

Question categories

The participants' questions were allocated to the question categories given in Table 1. These categories were chosen to cover the full range of questions asked, and they broadly reflect the information types defined within information design methodologies such as 'Information Mapping'. We were particularly interested in discovering the frequency of 'Task' questions, since it is a commonly held assumption

amongst developers of user assistance that users favour task-based information.

Once all of the questions were categorised, we counted the number of questions in each category. This gave us an overall indication of the most common and least common types of questions that users ask. Moreover, using the demographic survey results, trends in gender, level of expertise, and prior knowledge could be determined.

Task completion

By recording whether the answer to each question enabled the participant to complete the task successfully, we were able to identify sequences of questions that led to final achievement of the current objective.

Results

Table 2 gives the overall indication of how often each category of question was asked by each participant throughout the three tasks. Figure 1 is a visual representation of Table 2

What is particularly striking about the overall results is the dominance of 'Confirmation' questions, which represent almost half the total number of questions asked. It could be argued that this was caused by an artificial test environment. However, none of these questions related to the participant's understanding of the nature of the task and what was required of them - rather the questions were used to confirm either the correctness of a step in a procedure, or the participant's interpretation of the software user interface. So we believe it is reasonable to assume that users may be asking themselves these sorts of question as they perform tasks in software outside of the test environment.

Unsurprisingly, questions in the Task category have the second highest frequency (24% of the questions asked), and Location questions also represented a significant proportion (15%) of the total.

When the results were broken down by gender, we saw very little difference in the distribution of question categories between male and female participants. What was more surprising was that experience level also seems to have little effect on the categories of questions asked. Figure 2 compares the frequency of question categories for two different broad levels of computer experience/expertise.

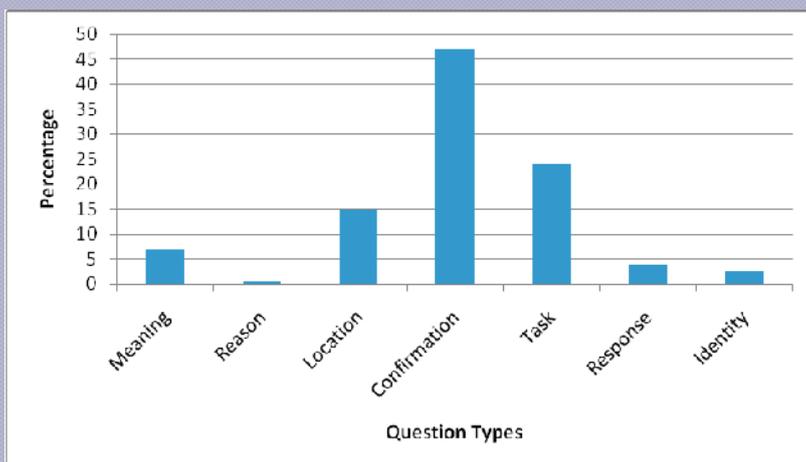
In terms of question sequence, the most interesting discovery was that, when a question sequence consisted of both a Task question and a Location question, the Location question usually came before the Task question. Out of 39 such sequences, the Location question came first in 31 of them (see Figure 3).

Question Category	Example
Meaning	I'm not quite sure what that means
Reason	Why doesn't it just paste it?
Confirmation	This is the train station, isn't it?
Location	Where do I need to look?
Task	What do I do now?
Response	What happened?
Identity	Which one is Street View?

Table 1. Categorisation of Questions

Question Category	Frequency	Percentage
Meaning	41	7.0
Reason	3	0.5
Confirmation	87	15.0
Location	275	47.0
Task	140	24.0
Response	25	4.0
Identity	15	2.5
Total	586	100.0

Table 2. Overall Question Frequency



What kind of assistance do users need?

Finally, our analysis of the question

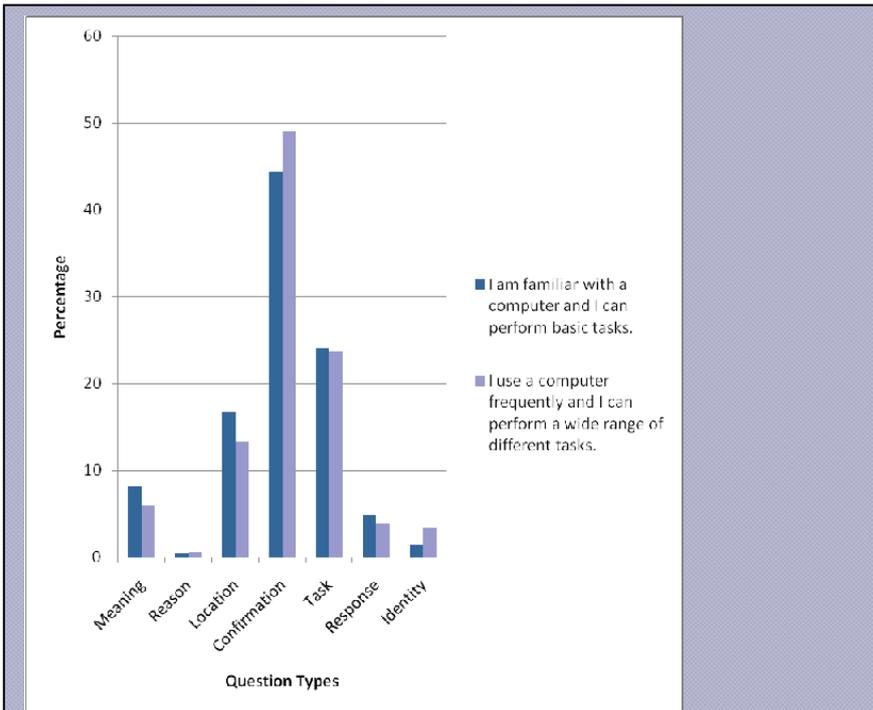


Figure 2. Level of Expertise Question Frequency

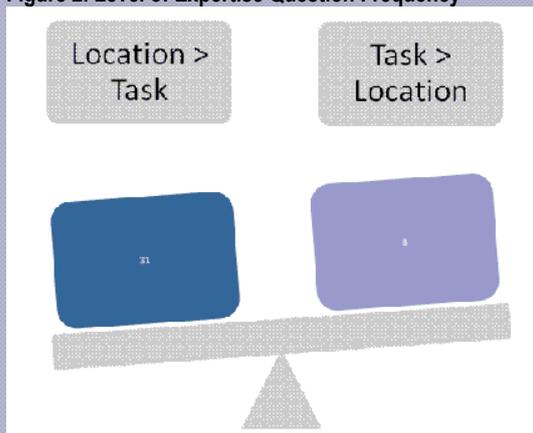


Figure 3. Location and Task Sequence Balance

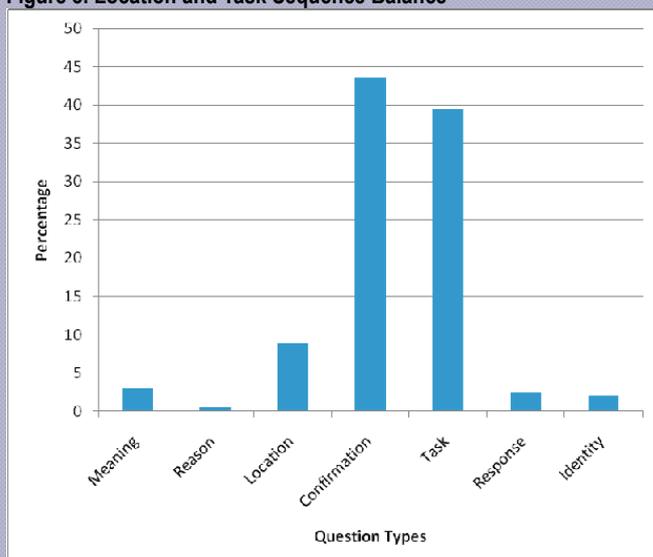


Figure 4. Sequence End Frequency

categories that immediately preceded successful completion of a task (sequence end questions) showed that Confirmation was again the most

frequent question category (indicating the participants' lack of certainty that they had completed the task successfully). Figure 4 shows this information.

Putting the Confirmation category aside, the most important question category for unlocking the solution appears to be 'Task', which represents approximately 62% of the remaining questions.

Analysis and recommendations

Study observations

It became apparent that many participants had trouble phrasing their questions, which suggests that the user felt that they had to ask the 'right' question as they were under observation. However, the test environment could not have been avoided in order to capture the results.

In addition, the participants had problems describing the function they wanted to perform and giving specific detail. For example, they frequently asked 'Does **that** do it?', 'How do I do **that**?' and 'Where is **it**?' This omission of detail could be a result of a lack of understanding or that the participant relied on the moderator understanding their current problem.

Confirmation questions

Although it is tempting to discount the frequency of Confirmation questions as a quirk of the test environment, we think it would be a mistake to do so. Users clearly lack confidence in their actions when performing new or unfamiliar tasks, and we believe that one of the challenges of user assistance should be to provide positive feedback and confirmation of correct choices and actions when required. One way to do this is to provide conventional tooltips that identify the purpose and function of buttons and fields as users hovers their mouse over them. But perhaps we should be going further than this?

The role of user assistance is to help users achieve their goals. We are suggesting that an important way of keeping users on track might be to respond to each step taken by the user either to confirm that is correct or to indicate an error. In the case of an error, the user assistance might prescribe the correct action. This kind of assistance is sometimes known as Guided Help, Active Assistance, or a Coach, and is most effective when the user, application, and user assistance have a shared understanding of the user's goal.

Correctly identifying the user's goal is one of the key challenges for user assistance: users can get annoyed quickly if their objectives are misinterpreted or they are provided with inappropriate guidance (think of Microsoft's Clippit's line 'It looks like you're writing a letter').

What kind of assistance do users need?

An alternative (and easier to implement) strategy is to enable users to practise tasks in a simulated environment that provides this kind of corrective feedback. The drawback of this solution is that the user is not actually completing any real tasks while using the simulated system.

Task and Location questions

The relatively high frequency of Task questions appears to endorse the widely held belief that users are interested in task-based instructions. Perhaps one of the reasons for this is that many software applications lack a clear workflow or sequence. The solution to the problem might be to redesign the user interface itself, rather than to provide a large number of separate task-based Help topics. Microsoft coined the term 'Inductive UI' as a way to describe applications that make task sequences more obvious, but there has not been much recent discussion of this.

Location questions, although less frequent than task questions, were also significant, and we think this is an area that is often neglected in user assistance. How often have you been in the situation of knowing exactly what command you need to use, but just not being able to find it within the menu system? Microsoft were forced to address this specific issue when they introduced the Ribbon in Office 2007, and suddenly experienced users were unable to find the features that they had been using for years in previous versions. Microsoft's solution was to spend considerable amounts of money on an animated web-based resource (see <http://tinyurl.com/interactiveguide>) that enables users to learn where Office 2003 commands have been moved.

It's not typically necessary to go this far to address users' Location questions - simply ensuring that you always provide an access method (menu sequence and/or keyboard shortcut) for any commands or dialogs that you describe is usually sufficient.

Conclusion

Our most important overall conclusion from this research was that you can learn lots about the way people use software by watching them complete tasks. We would recommend that, if

you are planning to write the user assistance for a new system, you start by observing people trying to do the same kinds of tasks that your users will want to do. They will have questions and problems that you may never have anticipated, and these can be used to shape the scope, content, and design of the information that you provide.

The good news is that you don't need fancy facilities and equipment to conduct the research we did. A quiet room, a laptop, and a cheap microphone/webcam is all that is required.

Task-based information is clearly important to users, but we should not neglect those Location questions that may be key to the successful completion of a task.

The dominance of Confirmation questions was an interesting and unexpected finding of the research. Its significance is open to debate given the somewhat artificial nature of the test environment. Responding to this category of question is clearly a challenge for user assistance, but is one that perhaps should be shared with the user interface designers.

Further reading:

Information Mapping:

www.infomap.com/index.cfm/themethod

Guided Help:

www.uatraining.eu/downloads/Guided_Help_AO_DC.pdf

Inductive UI:

<http://msdn.microsoft.com/en-us/library/ms997506.aspx>

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