Alternative to parrot training

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This section is based on a Danish book by Bjarne Herskin called "User friendly IT-training"(Brugervenlig edb-undervisning), Teknisk Forlag, København, Denmark, 1994. The assertions made are taken from the book unless otherwise stated.

Traditional way of working

User training is often carried out in the following way. Each student has a computer, and the teacher sits in front of the class with a computer and a video projector. The teacher tells which keys he pushes on his computer, and its screen image is projected onto a big screen. The learners try to remember which keys the teacher pressed and repeat the operations he carried out.

Since the learners try to mimic the teacher, this way of training is called the parrot style. After many hours training, the learners may develop sophisticated skills in repeating what is happening at a big screen. Unfortunately, this situation seldom appears at the learners' work place, so their skills are of little value. Instead, they may face the challenge of working on their own most of the time, with the aid of a shrink-wrapped 1000 pages manual and a colleague who hopefully has understood more of the system to be used.

Alternative way of working

An alternative training model will be suggested. Each task to learn is taught through three main phases, an overview, hands-on training, and a summary, see below.

- Overview

  Problem

  Principles

  Procedure

- Hands-on

  Exercise

- Summary

Overview

The aim of the overview is to make the learners understand the aim of the task and its main principles. No details of commands or other computer features are to be included. The overview should cover the three p's, problem, principles, and procedure, each of will be explained in more detail below.

The theory presentation should be approximately 15 minutes. If it lasts shorter than 10 minutes, this is an indication that the task to be taught is too small and the users' understanding become more fragmented than necessary.

Problem

One reason for the poor results in user training is that the teaching focuses too much on solutions for which the participants have not recognized any needs. The "problem" refers to the aim of getting the users to understand why they need the functions to be taught.

The best way of doing this is to know the work of the users, so that the teacher can relate to the users' tasks, which they are supposed to support with the computer system after the training. This is specifically important when teaching groupware, because thinking in terms of computer support for collaborative work is unfamiliar for most people.[1]

If the teacher cannot get to know the setting in which the users are going to use the system, example of motivation that the learners can understand are necessary. For example, to introduce spreadsheets, the teacher can pose the problem of updating a price list when the valued added tax is changed.

The constructivistic theory of learning emphasizes that the new competence must be related to what the learners already know, so if the teacher is unfamiliar with the learners' background, the session could start with a short discussion of the learners' experience in the area of the problem to be supported by the computer task. For example, if defining and using styles for paragraphs is the topic, a discussion of how the learners have worked on changing the format of documents could be a starting point.

Principles

The skill of pushing the right buttons does not necessarily imply an understanding that is robust enough to withstand the conversion to another brand of the same type of program. To foster this understanding, the way that the computer structures its data and operates should be explained without reference to specific windows or layouts.

When introducing the spreadsheet, the teacher can show on an overhead transparency the list of goods, the tax percentage, and the selling price in three distinct places, and explain that when the tax is updated, all the selling prices are recalculated as well.

In the case of paragraph styles, the teacher has to explain that a document is divided into paragraphs, and that they all have a style associated with them. Changing the style imposes changes of the formats of all paragraphs with the style.

Graphic illustrations of how the computer structures the data that is being manipulated might help the users understand how the computer is organized. A paragraph style could be visualized as a box attached to all the paragraphs that it is applied to.

The presentation of principles should be void of technological details, so the basic structures that may be implemented differently by the software vendors are explained.

Procedure

Corresponding to the principles, the procedure to be followed should also be visualised in a simple way for the learners, for example by means of boxes and arrows that show the flow. The task to be taught should be divided into 2-5 distinct phases, all of which can be identified with a

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[1] Jonathan Grudin (1994) Eight Challenges for Developers. Communications of the ACM, 37,1, 93-104

purpose and name. The procedure is on the overview level, so keystrokes and menus are still abandoned. The aim of the procedure is to provide an understanding of the interaction sequence to be followed during the task.

In the value added tax case, the sequence could be something like

1. Label the tax percentage cell
2. Create a formula for the first item in the list of goods
3. Copy the formula to all goods
4. Enter values in the tax cell

The styling example could be separated into applying and modifying style, and the procedure should explain that these two operations usually are carried out in two different windows of the program.

The assertion behind the overview is that if the teacher designs the introduction independently of the actual program, the great disaster will not happen.

Hands-on

During the hands-on session, the users should operate the computer by means of an instruction sheet that the teacher hands out after the overview.

Instruction sheet

The aim of the instruction sheet is to be a mini manual that ties together the overview and the human-computer interaction, and that also will be useful as a manual for the learners when they are back at work.

The instruction sheet should aim at getting the user to think and take notes, in addition to explaining the keystrokes. This can be achieved by designing the sheet according to the phases of the procedure given in the overview. The phases have to be concretised with the windows and keystrokes for the particular program, and in addition, the instruction sheet should provide space for writing up the aims of the phases.

An instruction sheet for applying and modifying styles in a text document could look like Figure 1.

Phase	Why	Interaction
Applying style		Highlight the paragraphs(s) Click the down-arrow in the style menu Move mouse and click the style to apply
Modifying style		Click Format Click Style … A new window appears Click the Modify … button A new window appears Click the Format ▼ button Click the property of the format to change, eg, the Font Change the font Click OK Click OK Click Apply

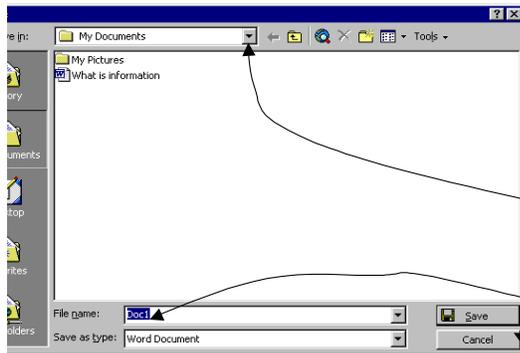**Figure 1. An instruction sheet for paragraph styling**

The "Why" column is left blank for the user to take notes where she can explain the reason for the mouse clicks or other issues that she may want to remember when she is back at work. The instruction sheet thereby becomes an annotated manual that the user is familiar with, as compared to the unintelligible monster provided by the vendor.

Novice users may need more of the context of the screen on the instruction sheet in order to recognize where to click. An illustration of this case is provided the figure below. Due to the space that the windows occupy on the sheet, the column design had to be abandoned.

The less information that is included in the instruction sheet, the more users have to write up themselves. The teacher will have to emphasize that the users should write comments on why specific mouse-clicks are included in the procedures.

Experience shows that the hands-on session is carried out more calmly when working in the manner suggested. By using the instruction sheets, the need for assistance diminishes, and also the types of questions change. In the classical hands-on training, nearly all questions concerned details of the interaction, while in the alternative approach, the users asks for more issues relating to understanding, eg, how to carry out the homework. The teacher should answer the detailed requests for help on the spot, while more general questions could be postponed to the summary phase, thereby giving everyone the advantage of hearing the answer.

- Save and open
- Aim
  - Finding data next time you use a program
- Rationale
  - The computer stores data in named files in folders. In order to open a file that you have been using before, you have give it a name the first time you save it and remember which folder you save it in.
- Operations

1 Saving. Before quitting a program:

   1.1 Click the 🖫 button. **Why?**

   1.2 Click the down-arrow in the "Save in" box. **Why?**

   1.3 Type the name you will give the file in the "File name:" box. **Why?**

   1.4 Click the "Save" button **Why?**
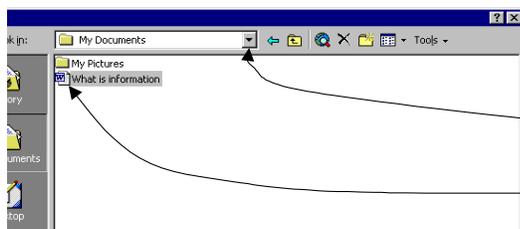
2 Opening. The next time you have opened the program and want to work on the same file:

   2.1 Click the 📂 button **Why?**

   2.2 Click the down-arrow in the "Search in" box. **Why?**

   2.3 Double-click on the file name. **Why?**

The questions from the learners are also a good source for the teacher for knowing the level of competence of the users. By considering this when preparing the next session, the teacher can base it on what the learners already have understood.

The alternative approach is also an advantage for the speed of the training. The exercises are of somewhat longer duration than traditionally, but the difference in speed between the fast and slow learners is reduced, so there will be less need for additional tasks for the quick ones.

Summary

At least three topics can be covered in the summary phase.

First, the issues of general character are presented, including responses to the questions raised by the students during the hands-on training. In addition to verbal explanations, also visualisations and examples should be provided by the teacher.

Second, supplementary details can be given now, since the users have understood the basic principles and have carried out the task. This has to be restricted to only a few tricks of the trade, so that the users are not overloaded with information.

Third, the relation to the users daily tasks can be shown. The teacher can give examples of how the computer system can be used for improving work procedures and produce more valuable results.

Resources for the alternative way of working

The layout of the classroom limits the pedagogical opportunities. Participants who sit in front of the terminals during the overview and the summary, easily get disturbed by the computers.

Alternatively, the teacher can face the screens, so that the learners have to turn around during the theory sessions and face the backside of the other learners' computers.

Another way of organizing the room is to put up the computers along the walls in a U-layout, and place the teacher in the opening of the U.

Overhead projector, blackboard and flip over are useful tools for the teacher, who can write up each procedure in a flip over in advance, enabling it to be visible during the entire session. Computer projectors are more disturbing than useful in the alternative way of working.

In introductory user classes, each participant should have her own computer in order to get maximum time for developing their skills. However, in more advanced topics, the discussions between the learners are of greater importance, so pairing them up on a computer may be an advantage.