# The Effect of Static and Animated Help Content on Product Usability

**Ersin Karaman**
Atatürk University
Faculty of Economics and Administrative Sciences
Management Information System Department
Erzurum, Turkey.

**Engin Kurşun**

**Faruk Saykal**

Atatürk University
Kazım Karabekir Faculty of Education
Department of Computer and Instructional Sciences Technology
Erzurum, Turkey.

**Murat Say**
Erzincan University
Kemah Vocational School
Erzincan, Turkey.

**Abstract**

*As primary components of information systems, hardware and software are composed of supporting documents which show users how to use these components easily. In this study, the effect of the help content presented in static and animated form on the usability of product is investigated. In this experimental study, the static-group comparison design is employed to 30 volunteer participants. The participants were divided in two groups randomly, and static help content is used by control group and animated help content is employed by experimental group. They are asked to complete four tasks in total. Task completion time is considered as dependent variable. In order to get demographic information, pre-questionnaire is applied. During the experiments, the completion time of the tasks is recorded by researchers. In addition, post-experimental semi-structured interviews were applied to get deeper understanding of the findings. Results indicated that the experimental group is faster than the control group in terms of completion time of the tasks .Also while animated group found the help content easy, static group found the content boring.*

**Keywords:** usability, help content, static, animated

## 1. *Introduction*

Ali opened packet of his new modem with great enthusiasm. He could not wait to access the Internet. He carefully plugged all parts of the modem and tried to connect. However, he could not connect the Internet. He tried almost all options to connect, but he failed. Came to mind to look at the user manual, he opened the instruction manual, but he did not apply instructions in the manual on the modem. He read relevant part of the manual again and again, but he could not do what he wants to do (effectiveness), even he spent hours to do this (efficiency).

He put back all parts of the modem in the package in an unsatisfactory manner (satisfaction). Similar situations have happened to almost everyone, but this excitement that comes with a product that we expect soon turns into disappointment. Though the main problem is related with the product itself, user manuals play an important role in the usability of the product as well.

All developed systems and software are composed of not only hardware or computer programs but also system documentation which explains the structure of the system, user documentation which explains how to use the system, configuration files which describe how to set up the system, and supporting web sites for updates (Ville, 2007). Users may encounter problems when using system or software and they consult to system configuration files or help content to solve these problems. The main aim of these help content is to provide effective solution to the problems that users are exposed to. For this purpose help contents are designed into different forms and offered to users. Transmitting the help content to the user can be considered as a communication process. In this process source information should be transmitted in an efficient way to the receiver.

Through information technology, contents can be supported by multimedia environments such as animation, simulation, audio, and video (Akkoyunlu& Yilmaz, 2005). Help content is prepared in different formats such as text-based, text supported with visual, animation, video-based or simulation. All these content types should be designed to make the effective (do what users want to do), efficient (minimum effort users spend to do a task) and satisfactory usage of products. Usability is defined in ISO 9241 as "the effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments". As seen in the definition, main component of the usability consisted of effectiveness, efficiency and satisfaction in a specified context of use.

Although there are large number of studies on products' usability, those that address help content are very limited. Improving usability of the product by user manuals is the focus of this study. Response of help content to required information in effective and efficient way has important role in terms of user satisfaction. In order to have higher user satisfaction, multimedia environments are used for help content which is used how to set up and use the system or how to solve problems that users encounter. This study is a base for designing help content to provide effective, efficient and satisfactory products. In this study, the effect of static and animated help content on the usability of the product is investigated. For this purpose, usability problems is put forth regarding both user understanding and utilization of help content offered into two forms.

## 2. Methods

In order to explore the effect of help content forms on product usability, the quasi-experimental static-group comparison design is employed in the study. In such a research design, subjects are divided into two groups (control and experimental) (Büyüköztürk, 2008).

### 2.1. Subjects

The population of the study is the users that need to setup or use modems with the aid of help content. Thirty volunteer subjects are selected by using purposive sampling in order to conduct the experimental tasks to the individuals who have not setup any modem yet (Yıldırım, &Şimşek, 2006).

**Table 1: Demographic Information of the Participants**

|  | Gender | Education Level | Computer Skill | Total |
|---|---|---|---|---|
| Experimental Group | Male: 12<br>Female:3 | Primary School :1<br>High School:6<br>Under-graduate:5<br>Master :3 | Poor:3<br>Medium:9<br>Good:3 | 15 |
| Control Group | Male: 13<br>Female:2 | Primary School 2<br>High School:5<br>Under-graduate:7<br>Master:1 | Poor:3<br>Medium:9<br>Good:3 | 15 |
| Total |  |  |  | 30 |

As it is shown in Table 1, a total of 30 subjects, 5 female and 25 male, have participated in this experiment. None of subjects have set up modem before. The participants were between 16 and 35 years of age with a mean age of 25.6 and median of 26.5. Of these thirty people, 3 are primary school graduates, 11 are high school graduates, 12 are under-graduate students, and 4 are master alumni.

### 2.2. Instruments and Data Collection

Demographic information is gathered by using pre-questionnaire form including age, education level, computer skill, and internet experience. In order to investigate the effect of help content on the usability of the product, four tasks are determined and asked to subjects to achieve with the aid of help content.

The tasks are prepared by taking likelihood of possible problems that users may encounter about the modem, and experts' ideas. In order to detect any defects on tasks, two individuals are exposed to the tasks as a pilot experiment. The tasks are as follows;

Task 1: Making cable connection of the modem

Task 2: To setup the modem.

Task 3: To setup wireless settings of the modem.

Task 4: To setup DNS and IP settings of the modem.

Observation form was used in order to collect usability metrics such as efficiency, effectiveness and satisfaction.

## 2.3. Material

In the experiment, Huawei modem was used. The contents are the same in both help formats. Static help content includes text and pictures in portable document format (pdf). Animated help content explains same content with audio, text and pictures. Animated help content is in video format and can be played back and forward. Animated help content is provided with separate video files and each video is designed for a particular task.

## 2.4. Procedure

Microsoft Internet Explorer is used to demonstrate the help contents. A protocol suggested by Cagiltay (2011) is used to inform the participants about the experiment and aim of the study.

All participants are asked to complete the four tasks by using the help content type that they are subjected to. Completion time of the tasks is recorded by researchers. Moreover, their ideas and difficulties that they encountered have also been noted on the observation form. Post-experimental semi-structured interviews have also been conducted to the participants. This interview includes two basic questions;

i) What kind of difficulties that you have encountered by using static and animated help content?

ii) When you meet a problem about usage of a product, what kind of help content do you prefer?

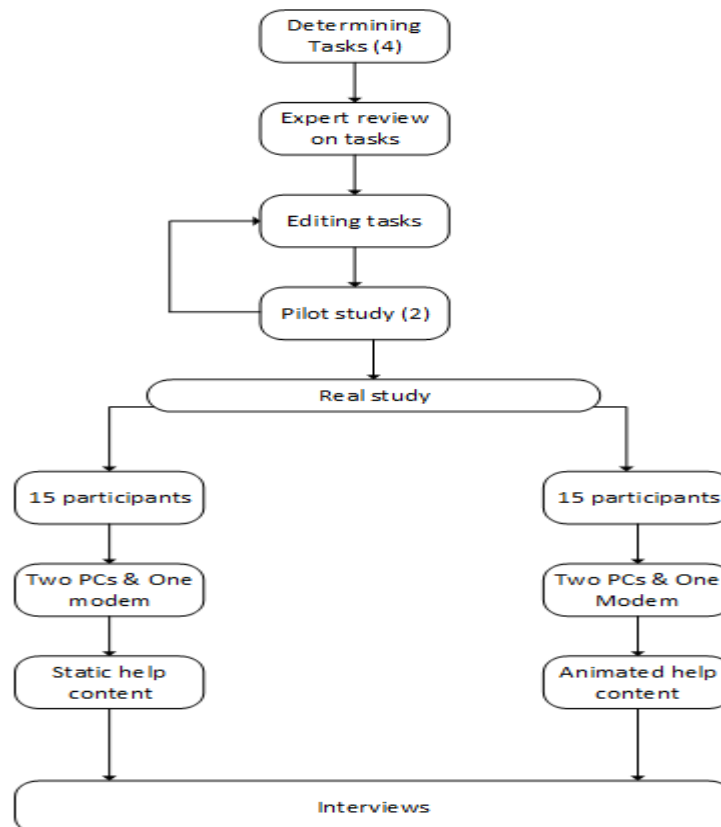Implementation of the experiment can be shown in Figure 1.

Figure 1. Implementation of the experiment

### 2.5. Data Analysis

The completion time of the tasks were recorded by the researchers. The quantitative data obtained from 30 subjects were analyzed by Mann-Whitney U test. This test is a non-parametric statistical test and do not rely on data belonging to any particular distribution. Semi-structured interviews were analyzed with content analysis technique.

## 3. Findings

In order to make general comparison of completion time of the tasks, the data is analyzed by a two-way mixed Analysis of Variance (ANOVA). There is a significant difference between tasks in terms of completion time ($F(3,84)=10.596, p<.001$). This is because of the difficulty of the tasks. The average completion times of tasks are 344 sec, 296 sec, 252 sec and 308 sec respectively. On the other hand, there is also statistically significant difference between the groups exposed to static and animated help content ($F(1,28)=6.313, p<.001$). The experimental group are faster ($X=248s, SD=34.42$) than the control group ($X=352 s, SD=62.32$) in task completion time. After general comparison, following analysis are applied to compare each task in itself.

Task 1: Cable connection of the modem

For the first task that subjects were asked to make a cable connection of the modem, Kolmogorov-Smirnov normality test was applied. According to the result of the test, static ($D(15)=0.305, p<0.001$), and animated ($D(15)=0.319, p<0.001$) were both significantly non-normal. That is the data is not normally distributed, so we should conduct Mann-Whitney U test which is a non-parametric test. As presented in Table 2, the result of Mann-Whitney test indicates that first group who used animated help content are faster in complete the task ($X=300 Sec$) than the second group ($X=400 Sec$) used static ($U = 12.500\ p=0,000, z=-4.278, r=-0.78$).

**Table 2: Findings for Task 1**

| Group | N | Mean Rank | Median | Mann-Whitney U | Z | p | r |
|-------|----|-----------|--------|----------------|--------|------|-------|
| 1 | 15 | 8.83 | 300 | 12,500 | -4.278 | .000 | -0.78 |
| 2 | 15 | 22.17 | 400 | | | | |

Task 2: Modem setup

In order to compare the completion time for the first and the second group for the second task, the normality of the data was checked. Kolmogorov-Smirnov (KS) revealed that animated group completion time ($D(15)=0.269, p<0.05$) is not normally distributed while static completion time ($D(15)=0.226, p>0.05$) is normally distributed. In this case we also applied non-parametric Mann-Whitney U test which indicates that that first group is faster ($X=240$ Sec) than the second group ($X=360$ Sec), U = 49.500, p=0.007, z=-2.679, r=-0.48)

**Table3: Findings for Task 2**

| Group | N | Mean Rank | Median | Mann-Whitney U | Z | p | r |
|-------|----|-----------|--------|----------------|--------|------|-------|
| 1 | 15 | 11,30 | 240 | 49,500 | -2,679 | ,007 | -0,48 |
| 2 | 15 | 19,70 | 360 | | | | |

Task 3: Wireless settings of the modem

In these tasks, participants were asked to setup wireless settings of the modem and again completion time is recorded by the experimenter. In order to ensure the normality of the data KS test has been conducted and results revealed that while the first group data is non-normal ($D(15)=0.403, p<0.05$), second group data is normally distributed ($D(15)=0.167, p>0.05$). To explore whether there is statistically significant difference between these two groups in terms of completion time of the third task, Mann-Whitney U is employed. Results indicate that the first group is faster ($X=180$ sec) than the second group ($X=300 Sec$), $U = 36.000, p=0.00., z=-3.318, r=-0.60$).

**Table4: Findings for Task 3**

| Group | N | Mean Rank | Median | Mann-Whitney U | Z | p | r |
|-------|----|-----------|--------|----------------|--------|------|-------|
| 1 | 15 | 10,40 | 180 | 36,600 | -3,318 | ,001 | -0,60 |
| 2 | 15 | 20,60 | 300 | | | | |

Task 4: DNS and IP settings of the modem

As the fourth task, participants tried to setup DNS and IP settings of the modem with the assistance of the help content provided. For the normality of data KS results pointed out that the data obtained from the participants both who use static (*D(15)=0.200, p>0.05*), and the second group used animated, (*D(15)=0.162, p>0.05*) have normal distribution. In this case, independent T-Test was employed on the data. The result showed that average task completion time of the first group is lower (*X=244 s, SD=14.89*) than the second group (*X=372s, SD=24.28*), and this difference is statistically significant (*t(169,7) =-4,494, p=0,000, r=0,64*)). This means that the first group is faster than the second group and the effect is high level.

**Table5: Findings for Task 4**

| Group | N | Mean | SD | t | p | r |
|---|---|---|---|---|---|---|
| 1 | 15 | 244 | 57.66 | -4,494 | ,000 | -0,64 |
| 2 | 15 | 372 | 94.05 | | | |

**3.1. Participants' opinion about the content types**

Participants' opinion was taken with post-experimental semi-structured interviews. Content analysis was administrated to these interviews. The ideas are grouped as difficulties, boring, satisfactory and easiness of the help content. Results related to all tasks are summarized in Table 6.

**Table6: Participants opinions about help content type**

| Group | Opinions | Frequency (f) | Percentage (%) |
|---|---|---|---|
| Animated | Difficulty | 10 | 16,66 |
| | Boring | 1 | 1,66 |
| | Satisfactory | 16 | 26,66 |
| | Easiness | 33 | 55 |
| | **Total** | **60** | **100** |
| Static | Difficulty | 34 | 56,66 |
| | Boring | 12 | 20,00 |
| | Satisfactory | 6 | 10,00 |
| | Easiness | 8 | 13,33 |
| | **Total** | **60** | **100** |

Participants in animated group mostly reported that, animated help content is easy to use and clear in understanding. However, since they have not setup any modem and are not familiar to name of physical component and setup parameters of the modem they had some difficulties. One of the participant in animated group indicated that "To setup a modem was too easy". Another participant stated that "voice instruction in the help content is so good". On the other hand, static group participants have bored to read textual information from the static help content. In the experiment, one of the participants in static group stated that "reading the text is so boring, would it be possible to do the tasks just looking at pictures in the document?" Another participant stated that "reading text is time consuming".

## 4. Discussion

In order to investigate the effect of help content form on product usability, an experimental study is conducted on modem product which is used to connect to the Internet by manipulating help content form as static and animated. According to result of the quantitative data, experimental group are 35% faster than the control group in terms of completion time in general. Moreover, findings show that experimental group is faster than control group for each task separately. For both groups, qualitative data that is also gathered during the experiment shows that the help contents are beneficial for modem installation and usage. However, content analysis reveals that participants in the animated content group understand the task better and state the easiness of the task more often, where as participants in the static help content group have difficulties in reading the text and recognizing the physical objects.

Although the comparisons of static and animated contents with respect to usability are rare in the literature, there are evaluations with respect to memorability and permanence in learning. Present results are consistent with the studies that compare verbal and animation content with respect to users (Mayer & Anderson, 1997; Aycan, Arı, Türköğuz, Sezer&Kaynar, 2002; Rieber, 1990). These studies show that the animated content is more understandable and memorable than verbal presentation or static visual contents. However, these studies use verbal or static visual contents for the control group, although they use animated contents for the experimental group.

## 5. Conclusion and Suggestions

In this study, the effect of help content type on product usability is investigated in terms of user and customer satisfaction. In order to achieve this aim an experiment including four different tasks is designed and applied 30 participants in total. The participant is divided into two groups (control and experimental) and they asked to complete the given task for a modem product by using help content (static and animated). Task completion time and participants' opinions are recorded by the researchers. The results indicated that animated help content enables user to fix the problem or complete a setup procedure faster than those of using static help content. Still providing help content with visual and animated form make user and customer satisfied about solving a problem or setup the product.

It is worth to note that, both groups are ignorant of the other groups' completion time of the tasks. So they have not an opportunity to compare help content form in terms of efficiency and effectiveness.

According to the participant's opinion, it can be concluded that animated help content make user more satisfied than the static help content in terms of easy to understand of the content and getting support about the tasks. On the other hand, users in static help content group complained about reading process of text parts of help content. This make them get bored which may affect the perception about the product.

Based on these results it can be suggested that animated help content should be provided to customers in order to increase usability of the product. Nevertheless, this study conducted for modem product which includes both hardware and software parts which are used to configure the hardware parameters. Therefore, it may also be recommended that supporting material of a product may be published after experimental usability studies. Thereby, different user groups having different characteristic are also taken into account which may support customer intimacy as also recommended in the study Møller (2013).

In order to get deeper analysis about help content type effect on product usability, new researches can be conducted with the same methodology presented in this study. To do so, more participant, different types of product, help content and other supplementary documents and materials can be used. In conclusion, comparison of help content types is useful for providing valuable insights to product manufacturer in terms of preparing supporting material regarding product usability and customer intimacy.

## Limitation

Results are limited to number of tasks. Another limitation of this study is that participant has diverse educational level.

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