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Screencast for Learning DOS Command

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Abstract: The Screencast is the result of a recording or screenshot of the monitor that is presented in video format. the developed media is screencast which contains basic DOS (Disk Operating System) commands. There are two basic types of commands namely internal and external commands. The purpose of this development is to provide a medium that is used to learn basic computer commands or build a learning environment. The development follows the steps modelled by Sadiman which consists of nine steps. The validation process has been carried out and obtained results that the media is appropriate for use in learning despite revisions in presenting it. Trials were also conducted on students and received positive responses. Note the results of the development, especially from the user are some technical things in the recording and the need for the presence of the instructor.

Keywords: screencast, internal command, external command, DOS

1. INTRODUCTION

The computer system consists of hardware, software, and brain ware. These three components are interrelated with one another. Learning about these three things is a must. Therefore, anyone whose work involves computers must know and understand it.

Some of the main peripherals that exist on a computer are called hardware. These peripherals are the input unit, microprocessor, main memory, and the output unit. They work simultaneously to process incoming data from the output unit and give results to the output unit of output. This process will not occur if no commands have been entered. Thus, the computer does not function if there are no commands to run.

The collection of commands to run the computer according to its function is called a program. This collection of programs is called software. The most important software and is run when the computer is first turned on is the operating system. The functions of this operating system are booting, memory management, loading and execution, data security, disk management, process management, device controlling, printing controlling, and the user interface [1]. From these functions, this software becomes the main foundation for the functioning of other software.

Microsoft is a software company that has operating system products for a long time. Based on the display mode there are two namely text mode and graphic mode. Text mode was initiated by MS-DOS, known since 1980. This operating system is also known as an operating system that has a command-line interface, because of the interaction between the user and the computer via the command line entered via the keyboard. The graphic mode was first introduced by Microsoft, Windows 1.0. in 1985. This mode is also known as the graphical user interface (GUI), because of the interaction between humans and computers through a graphical interface. Even though the operating system is graphical mode, Windows up to now still provides text mode through its DOS shell.

Since the advent of graphic mode, people have begun to leave text mode, but not everyone. Some people think that interaction with a computer via a command-based interface is still considered necessary. This can happen first because only text mode has a feature that is not in graphics mode. Second, if all efforts in graphic mode have nothing to do to resolve the problem or create a backup system, text mode becomes an alternative choice. Thus knowing, understanding and being able to apply the command lines are still needed for people whose work cannot be separated from the use of computers.

An initial survey of educational technology students randomly gave the result that more than 90% did not know about DOS commands. Almost all students who become survey respondents know about the Windows operating system and can operate it. However, this capability is limited to the use of graphics-based features, so that if the computer when booting early cannot enter the graphics space then they experience confusion, especially managing files and making backups. Though the Windows-based operating system has a feature to run the non-graphical operating system so that it manages and saves its data files with DOS command lines. Thus, learning DOS commands is very necessary for someone professional who involves the computer as the main tool and supports their work.

Previous research by Margono and Shneiderman, gave unsatisfactory results when users learned DOS commands by memorizing commands [2]. More than half of the thirty research subjects had difficulty remembering

the steps in creating a file. Some of them also have difficulty remembering commands and using them, so the computer responds with error messages. Learning difficulties DOS commands provide opportunities to develop materials that can be used for learning. The purpose of this development is to provide learning materials in the form of screencast that is appropriate for learning DOS commands. This is necessary because variations in media and sensory stimulation for adult education are believed to be able to improve learning outcomes [3], [4]. Besides, user responses can explain their using screencast. These responses can be interpreted as opinions and behaviours that are very important in responding to screencast as learning material.

Initially, Jon Udell thought about how to demonstrate, explain, or demonstrate software behaviour to others. Of course, the answer is to record what is on the monitor screen into a video and add narration to explain what is displayed on the screen. To make a video that is feasible in conveying information is not easy because it requires someone competent and instinctive in doing so, both from recording images and sound [5]. This is a particular difficulty, especially Jon Udell who wants to share his knowledge and experience with others about software behaviour. There is something easier in producing the film software that is what is on the screen is captured or recorded in the form of a static image (screenshot) then compiled and narrated, but eliminates the video element as a continuous image that represents a movement or action or behaviour.

As explained earlier that screen casting is used by Udell to share knowledge and experience with others on software behaviour. In recent years screen casting is not only used by programmers but also extends to teachers, students, researchers, screen casters (people who like to make screencast), and even for a product demonstrator. Thus, screen casting is not only in certain fields but also encompasses in the fields of education, research, development, industry, hardware, software and even fields that cannot be defined in context but support the implementation of a job. The objectives can be various, namely tutorials, product tours, visualizing complex information, supporting proposals and grants, recording meetings, reporting errors/failures on software products (bugs), hardware demos and machinima (game demos) [6].

Screencast has been used extensively in the education field, from the lowest level to tertiary (vocational) education [7], [8]. Screencast provides opportunities in the field of education, especially learning related to computers. This is in line with Information & Communication Technology-based education which is touted in order to support learning in the 21st century because students' use of computers will become important in the future. This involvement can be in the form of processes and equipment used in facilitating learning.

The screencast is a multimedia-based learning media because it involves multimodal sensory namely the eyes and ears [9]. Video sends messages through the movement of images captured by the eye and audio narration that provides explanations captured by the ear. This difference provides opportunities for learning to understand better than just video or text or just narration [6]. This is also a principle in designing multimedia learning, which is the principle of modality which contains that people learn better when animation or video and audio explanation (narration) than animation or video and words printed on the screen [10].

In general, screencast as a learning medium contains procedures related to computer-based work. The procedure is in the form of steps in operating certain application software or an explanation of the features it has. In some previous studies, a screencast is an effective method in explaining computer-based work procedures, especially the features possessed by certain software [11], [12]. This evidence can be used as a foundation for the use of screencast as a learning medium especially for learning to operate the software and its features.

Aside from being a learning medium, screencast can be used as a tool to create a product that is a video that contains a demonstration of learning achievement by a student. In Shafer's research, students make screencasts and review their own and those of their colleagues. Students reviewing screencast made by their friends have a stronger influence on developing their skills and evaluating than the process of creating their screencast [13]. Marcos reported that his students were highly motivated to capture their mathematical knowledge through screencasts that they produced themselves [14]. The screencast is used by students to share knowledge with fellow students and comment directly on what has been witnessed is evidence of learning approaches in various ways [15].

This was also done in college to explain mathematics to his colleagues [16]. While other experiences prove that screencast is used as a tool to record students' expression and creativity in using dynamic mathematical software [17]. Other studies reinforce the results that students who develop screencasts for their learning materials achieve higher scores than screencasts developed by teachers [18]. In programming lectures, screencasts developed by students imitating screencasts created by learners have higher scores, in theory, laboratory and final examination assessments [19]. The assignment of screencast in accounting education can improve the performance of final semester exams in research that has been done [20]. Thus, screencast can be used as a tool to improve learning performance when students produce screencast.

There are six advantages to using screencast namely: (1) allowing flexible and personal learning, (2) additional lectures and increasing understanding of key mathematical skills, (3) providing learning experience, (4) helping students when not attending lectures, (5) providing multimodal support for learning mathematics, and (6) facilitating examination and revision of exams [21]. These

advantages appear in qualitative case study research in the form of surveys conducted to study mathematics, but it does not rule out the possibility of learning others can even appear additional benefits.

The screencast is a term that refers to video recordings of screen monitors, while screen casting is about tools, techniques, and media. Both of these terms refer to the same thing but different uses in its mention. The screencast is a term that refers to video recordings of screen monitors, while screen casting is about tools, techniques, and media. Both of these terms refer to the same thing but different uses in its mention. Screencast content can provide benefits that can be obtained in its use. Thus, screencast content can be designed according to the advantages and objectives to be achieved in learning.

Disk Operating system (DOS) is a text-based operating system that was first created by Bill Gates and Paul Allen on an IBM computer. Until now, computers with Microsoft-based operating systems are still found with the DOS commands. DOS has the characteristics of a text or command-based interface, a sign of readiness to receive commands from the user called a prompt, single-tasking that can only run one program at a time, run the processor in real mode, the single user that can only be used by one user at a single time.

However, DOS is still classified as important in many areas of coverage such as programming, and operating older applications. All generations of Windows support DOS commands for compatibility with older applications. Thus, it is very important to understand the basics of DOS before continuing with the Windows installation process.

DOS can be useful as a helper device when Windows cannot run properly and can access the hard drive without its graphical mode and is capable of performing system diagnostics and problem-solving. Also, the DOS function is to organize or control computer activities, manage memory, manage data input and output processes, file management, directory management.

DOS has 230 commands available and can be used to automate processes, create batch files, carry out troubleshooting and diagnostic tasks and manage files. DOS commands since it was first created underwent changes, these changes are actuating an order and create new commands or even some that have been maintained until now. This change aims to maintain and maintain the operating system so that it works optimally and is not used haphazardly by users. DOS has commands that are grouped into two, namely internal and external commands. Internal commands are commands that do not require special files because all internal instructions are already contained in the command.com file. External commands are commands that require a file to process the command.

2. METHOD

To conduct development, refer to the video development model of Sadiman [22]. Nine steps of this model have been carried out, namely identification of needs, formulation of objectives, development of materials, development of evaluation tools, compiling manuscripts, production, trials, revisions, products ready to be used.

Material development has been carried out based on the identification of needs, and formulation of objectives. Internal and external DOS commands are commonly used as subject matter. There are eighteen internal DOS commands, and there are five external DOS commands.

The next step is the preparation of a script for the development of screencast. The manuscript is arranged in the category of internal and external orders, so there are two screencast products. Each product is structured based on the urgency of the need to use DOS commands so that not all commands are material content.

The user's trial step when using screencast is used as a learning tool. Thirty-five students were divided into seven groups, with each group having five students. Each group was copied to a screencast product and given two weeks to study it. In the second week, students have finished studying in groups and filled out the questionnaire that was prepared.

First-year educational technology students take the operating system and application software courses. Trials are conducted on students who take these courses. There are 35 students involved in the trial in real conditions. This means that the test is carried out exactly when the material is in progress.

Development of instruments to test the feasibility of instructional media to media experts and subject matter experts. The selected media experts are lecturers majoring in educational technology with more than twenty years of experience in the field of instructional media. The material expert is a lecturer majoring in Informatics Engineering with more than five years of experience.

Other instruments are in the form of a questionnaire to determine user responses after utilizing screencast in learning. User responses are accumulated from filling out each questionnaire item with answers that agree strongly and agree. The number of participants who answered is accumulated and the percentage.

3. RESULTS AND DISCUSSION

The production of the developed script is a screencast for internal and external DOS commands with the MP4 file format. The consideration is that the file can be used for online-based learning material. Internal screencast and external command have different characteristics. Table 1 shows the characteristics of the two screencasts produced.

The two products developed have been tested for eligibility both as media and as learning material. Some notes on the results of tests from media experts are about sound. The narrator's voice on the screencast is unclear and the background of the narrator's voice is quite disturbing. Material experts give notes about the lack of material used

as content. The note was finally cancelled by the material expert because the material presented was limited to file management and computer maintenance.

Table 1 Characteristics of Screencast Products

Data	Detail	Internal	External
Video	Length (minutes)	23:51	10:27
	Width (pixel)	1280	1280
	Height (pixel)	720	716
	Data Rate (kbps)	197	154
	Total bitrate (kbps)	357	319
	Frame rate (frames/sec)	25	29,97
Audio	Bit rate (kbps)	160	165
	Channels	2	2
	Sample rate (kHz)	48	48
File	Size (MB)	62,1	24,4
	Format	MP4	MP4

Table 2 Analyse User Response Data

Statement item	Percentage
The material presented is compact, concise, and clear	100
Narrative sentences are precise, clear and consistent	100
Video quality	91
Audio quality	91
Easy to understand	97
Readability	97
Complete explanation and example	100
Suitable for other subjects	100

The results of the analysis of user responses are presented in Table 2. Based on user responses to aspects of the material, language, explanation and development of other subjects, 100% results are obtained. Aspects of ease in understanding the material and legibility of the command text on the video, users who gave positive responses by 97%. The lowest aspect, with a percentage of 91%, is about video and audio quality.

In addition to filling out the questionnaire, users also provide comments and suggestions for screencasts that they have used. Comments and suggestions, in general, are almost the same as those in the questionnaire items, namely image, and audio quality. Some comments that need attention are showing the face of the narrator deemed necessary by some users. This should also be a concern for screencast developers for other next content. Based on previous findings the presence of instructors in the video gives a positive influence on learning perceptions and level of satisfaction when the topic becomes difficult [23].

4. CONCLUSION

The results of the development have been done with two screencast products namely internal and external DOS commands. Screencast products get positive responses from users. Student expectations namely screencast is applied to other subjects. Besides, the presence of an instructor can reduce mentally when topics are difficult to understand. Educational technology students can provide

new insights on existing media, especially instructional videos.

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