

(An Experiment Study in Indonesian Context)

M.Sc. Master's theses

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ACKNOWLEDGEMENT

Praise and grateful to The Almighty, Allah SWT for His blessings so that I can accomplish this challenging Master's theses and finish my study on the scheduled framework of time at the University of Twente - Enschede, the Netherlands. I realize that this study would not have been possible without the support and encouragement of many individuals and organizations.

First of all, I would like to thank NESO Indonesia for its financial support which has made my dream come true to study abroad with scholarship scheme. Without scholarship support, I will never taste this rare opportunity. I feel fortunate that I can be selected as one of the StuNed awardees.

Next, it has been a privilege to work and learn under the tutelage of such inspiring and dedicated supervisors, Dr. Hans van der Meij and Dr. Jan van der Meij. I am really grateful for their almost limitless time to discuss and offer me exceptional growth opportunities to join in this video project.

I am also really indebted to Pak Irwan as the headmaster of State Junior High School (SMP N) 30 Bandar Lampung, Indonesia and Kak Abdul Hanif for helping me to conduct this research. Thank you for providing opportunities to use computer facilities so that I was able to successfully complete gathering the data and conducting this research. Many special thanks also go to Poppy Ramdhania and Agung Adi Priyanto for helping me to create this video instruction.

What a delight it has been go to study with a smile on my face. To a great extent, I owe this to the good fortune of having wonderful friendships. Thanks to CIMA troopers (Zeno, Bertha, and Fauzan) and all PPI Enscheders who were always with me in all situations and gave me warm welcome of hospitality, friendship and endless encouragement.

Finally and especially, I am really happy and grateful to my parents, my wife and my little star daughter: Rizki Mayara Andini, who has tended my soul and held my compass throughout this journey. I consider myself fortunate to have benefited from the patience, love, and encouragement of such faithful family.

Enschede, July 2012

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(An Experiment Study in Indonesian Context)

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Abstract

This study examines the effectiveness of using a multimedia presentation during learning activities, especially the effect of using video demonstration on students' performance in text formatting. In particular, the study was conducted by comparing students' learning performance from those who were using tutorial and those using video. The effectiveness measures were made based on how much the participants succeeded their learning task from pre-test, post-test and retention test scores as the repeated measures and from their motivational beliefs (task relevance and self-efficacy) including moods. The sample of this study was 62 students from Junior High School of SMP N 30 Bandar Lampung, Indonesia with mean age 14.09 years.

The results suggest that participants in video condition had significantly higher learning outcomes both in post-test and retention test scores. In the retention test, the mean scores gained by the participants in the video condition were almost twice as high as the mean scores in tutorial. During training, it was found that the students in video condition had more positive moods than those in tutorial. Overall, the participants in video condition were more motivated. This high motivation predicted the participants to spend more time on learning tasks during training.

Key words: video, tutorial, multimedia, modality principle, learning performance, motivational beliefs

I. Introduction

Nowadays, there are more people who use video than paper manual instruction. The use of video as instructional media has been widely used in many countries. Many people argue that this multimedia device has many advantages for students and teachers. The ease of use is one of the benefits in using video instructions. Also, the spread use of computers and the decreasing cost of internet bandwidth facilitate and ease people in using and making video and animation in computer-based learning environment (Hartmann, 2006). Video is also very appropriate to deliver a large amount of information in a relatively short of time (Ertelt, 2007). If pictures are said to be worth a thousand words (Mayer & Sims, 1994), an illustration is regarded as worth ten thousand words (Mayer & Gallini, 1990), video is assuredly believed to be able to present information worth a million words.

One variant of video is on-screen videos. On-screen videos can display what is happening on a computer screen (Ertelt, 2007). According to Atlas, Cornett, Lane, and Napier (1997), on-screen video is a full-motion recording of the computer screen or as a show-me-how instruction. Ertelt (2007) contends that on-screen videos can be used to train and acquire skills for more complex content of the multimedia learning materials in step-by-step demonstration. Also, on-screen videos can provide the opportunity to convert on-screen manual to an on-screen video. Further, on-screen videos open the opportunity to demonstrate application possibilities within a multimedia learning environment with an authentic context. In other words, on-screen videos are not only a further development of integrating screenshots into manual but they are also the multimedia version of a worked-out example. Subsequently, it is also believed that by showing what is happening on the computer screen with similar realistic objects, learning a new computer application, e.g. formatting text in Microsoft Word, can be more easily enhanced in on-screen videos. There have been numerous studies investigating the effectiveness of using videos on learning performance in comparison to static pictures or paper manual instructions. Donkor (2010) examined the effectiveness of video instructions over print-based instruction. He investigated participant's performance by employing performance test and achievement test for students using print-based instruction and students using video instruction. The finding suggests that the video-based instructional materials are pedagogically superior in the use of instructional effectiveness in teaching practical skills than the print-based materials. In the same vein, Hartmann (2006) examined the superiority a video to a static visualization in executing and support understanding of procedural tasks. The result suggests the general advantage of video upon static pictures. Rijpkema (2011) also conducted experiment by comparing students who received video instruction and students who received paper manual. She found a similar result to Donkor's study. The students in video condition had higher learning outcomes than the manual groups.

However, there are also a number of researches indicating that dynamic visualizations have no effect on learning outcomes. Dynamic visualizations include video and animations. ChanLin (2001) found static visualizations to be superior over dynamic ones for novice learners. Further, ChanLin suggested that animations may confuse learners with low level of prior knowledge. Likewise, Tversky et al.,(2002)concludes that dynamic animation, i.e. video did not show more effective than static pictures. Even, the use of animation sometimes can distract learners due to its complexity and rapidity in presenting the content of information. They added that even though sometimes animation yielded higher learning outcomes, but the content information that is presented in animation and static pictures is incomparable. Due to the fact that many inconsistent findings were found, the topic of comparing the effectiveness between video and paper-based tutorial still becomes interesting to investigate.

From the above mentioned research, such as Donkor (2010), he did not measure motivation as one of the mediating factors on the learning effectiveness. In fact, motivation also requires special attention to make sure that users of the instructional multimedia feel confident in overcoming the obstacles and failures that are inevitable part of software training and use (Van der Meij, in press). It is presumably believed that multimedia learning environment can lead students or users more engaged and motivated. According to Fisher and Ford (1998), the allocation of effort toward learning activities is driven by individual motivational processes, such as personal goals and interest, incentives, individual personality differences, and metacognitive knowledge. To support this idea, Gerjets and Scheiter (2003) argue that the pattern of cognitive load is not only a matter of instructional design, but it is mediated by the learners' learning activities which in turn depend on the personal goals and interest of the learners. Ertelt (2007) also found motivation and acceptance as important influence on a learner's level of interest and sustained concentration. Additionally, mood of the participants which show their perceptual feelings of happy, sad, or neutral during learning or training also holds an important role to sustain concentration. All of these process lead to learning outcomes and learning attainment. Therefore, this research was conducted to add what is lacked in those both studies by including motivational beliefs and moods of the students.

This study was intended to investigate and validate the effectiveness of using a multimedia presentation during Word training, especially the use of video to support students' understanding in procedural tasks in text formatting. In particular, the study was conducted by comparing students' who were using tutorial and those using video. This study was divided into six sections. Chapter one is introduction which contained short relevant information and the purpose of the study. Some theoretical frameworks in multimedia learning and instruction were discussed in chapter two. Based on empirical findings combined with theoretical insights, research questions were addressed in chapter three. In chapter four, methodology of the research was outlined. After that, the findings were presented in chapter five followed by discussion and conclusion in the last chapter.

2. Theoretical Framework

2.1 Cognitive Theory in Multimedia Learning (CTML)

CTML is a theoretical framework rooted from Cognitive Load Theory (CLT). CLT itself is the fundamental theory of how human cognitive architecture (Sweller, van Merrienboer, & Paas, 1998) works and constructs instructional design in multimedia environment in teaching and learning practices. De Jong (2010) ascertain that CLT is a theory relating two fundamental areas: working memory characteristics and the design of instructional system.

In human cognitive architecture from CLT, there are two kinds of memory with different characteristics and function: working memory and long-term memory. Working memory has a limited capacity while long-term memory has large amount of information can be stored. When we are talking about learning with multimedia, it is worth noting that we use different formats and different channel of learning modes. Learning with multimedia is actively searching information and seeking some cognitive processes through active participation in on-going learning activities in the use of multimedia principles. The discussion of effective learning will come to the front of how learning will be processed in our schema.

Schema functions as a mechanism for knowledge construction and organization and to store the information input (Artino, 2008; Mousavi, Low, & Sweller, 1995; Sweller & Chandler, 1994). Next to this, schema also reduces working memory load. Working memory or short-term memory is limited when storing information. It is believed that working memory can only store information approximately 7 units of information at a time (Miller, 1956 as cited in (Sweller, et al., 1998). Therefore, if we would like to store the information in our working memory, chunking is the best solution. By using chunking, we can split the information into meaningful unit so that our working memory can recognize and construct them easily.

The CTML is a theoretical framework that allows originating design principles for multimedia learning in multidimensional context. It can be applied in many situations which employ multimedia as the design of instruction. It refers to processes within perception (intake of information via the eyes and the ears), the perceptual store (i.e., acoustic and visual-sensory memory), and the different subsystems of working memory (Rummer, Schweppe, Fürstenberg, Scheiter, & Zindler, 2011). There are three assumptions of CLT of Multimedia learning (Mayer, 2001a): dual channel assumption (Paivio, 1986), limited capacity of working memory (Sweller & Chandler, 1994; Sweller, et al., 1998), and active processing assumption. In dual channel assumption, human process the information from separated channel: auditory channel by using their ears and visual channel by using their eyes. This assumption is mainly based on sensory modalities (visual and auditory from Baddeley, 1998) and presentation-mode approach (verbal and non-verbal presentation from Paivio, 1986). In limited capacity assumption, humans have limitation on processing information at one time in their each channel as also suggested from CLT in working memory capacity. In active-processing assumption, humans are actively engaging in cognitive processes to construct mental representation of their experiences by selecting, organizing, and integrating the information with prior knowledge.

2.2 Modality Effect in Multimedia Learning

Comparing the effectiveness of on-screen videos is related to adding spoken texts into videos or pictures, either dynamic or static ones. This is related to modality effect. According to Leahy and Sweller (2011) modality effect occurs when instructional material that is presented in dual (auditory and visual) formats is superior to visual only presentation. They also contend that there is a certain condition in which modality effect can be obtained or not. The effect is only obtainable under conditions where the two or more sources of information refer to each other and must be processed together in order to be intelligible. If one source of information merely recapitulates another source of information in a different modality, the effect will not be obtained.

The term "modality effect" is initially used by Mousavi, Low, and Sweller (1995) in a broad sense. They define modality effect as the idea that effective cognitive capacity may be increased if both auditory and visual working memory can be used to process incoming multimedia messages. They investigated modality effect in a broad sense to include situations in which presenting simultaneously visual and auditory material is superior to presenting the same material successively.

However, Moreno and Mayer (1999) investigated modality effect in the more restricted sense to refer only to situations in which presenting pictures and spoken texts (e.g. animation and narration) is more beneficial than presenting pictures and printed text (e.g. animation and on-screen text). An empirical study conducted by Moreno and Mayer (1999) found that learners who received animation and narration are more superior on retention test and transfer test than those who used animation and on-screen text. The rationale of the findings insists that when pictures and words are both presented through both channels (visual and auditory), it can avoid the overloaded in one channel while the other channel is unused. This rationale is based on the dual channel capacity from Paivio (1986). This is what Mayer (2002) constitutes as modality principle in multimedia learning. However, it should be noted that their experiment was conducted in a situations in which the animated narration runs at a fast rate without learner control of the presentation.

In the review of animations, Tversky et al., (2002) reported that in general dynamic visualizations (i.e. video) were not more effective than static visualizations. In the cases that they were more effective, this could be ascribed to more detailed information that was available in the dynamic visualizations or because of the benefits from study procedures, such as prediction, that were not available in the static visualizations. Further, they contended that effective animated graphics should conform not only to the Congruence principle, but also to the Apprehension principle. The congruence principle states that the structure of dynamic visualizations should correspond with the way people conceive the processes or procedures that are visualized. For example, if operating a machine is conceived as a sequence of discrete steps, a dynamic visualization should visualize it that way. Apprehension principle explains that the structure and content of dynamic visualizations should be readily perceivable and comprehensible. For instance, dynamic visualizations should not go too fast. Tversky et al. (2002) also postulate some reasons why animations fail to find more benefits than the static visualizations: animations may be hard to perceive and animations may be comprehended discretely rather than continuously. From this study, they also asserted that interactivity can help overcome the difficulties of perception and comprehension. Stopping, starting, and replaying an animation can allow the re-inspection, focusing on specific parts and actions. Further, they pointed out that animations that allow close-ups, zooming, alternative perspectives, and control of speed are even more likely to facilitate perception and comprehension.

An experiment study conducted by Palmitter and Elkerton (1993) also shows the failure of animation over static pictures. They compared animated and static graphics for teaching students how to use an online help system. Although students using animation completed the training task more quickly, they completed the testing task more slowly. Furthermore, after a week, performance of the students who had studied from static pictures or text improved, but performance for those who studied by using animation even declined. Tversky et al., (2002) concludes that animations may be distracting, or even harmful to conveying important information. They gave the example of their claim by providing animated weather maps to novices that only encouraged learners to attend to perceptually salient information, but they were unable to use the animations to extract thematically important information, especially the causal information that underlies adequate mental models of the system.

The failure of including spoken words as the replacement of written on screen-text was also indicated from Tabbers, Martens, and Merrienboer's (2004) experiment. With the participants of 111 second-year university students, they investigated the generalizability of modality effect and cueing effect on students' learning performance in classroom setting. Cueing effect is similar to giving cue or signal to attract students' attention in understanding multimedia presentations. They

can be attached in the pictures or in auditory messages. In the pictures, giving visual signals, such as heading, highlighting, and zooming is also cueing effects. In the spoken words, slower or emphasizing the tone is one of the signaling devices. The result of the experiment suggested that adding visual cues led to higher learning score in the retention test, while replacing visual text with spoken text resulted to lower learning scores in the retention test. However, it should be taken into account that the experiment conducted by Tabbers et al., was using learner control. This is different from Moreno and Mayer's (1999) research which used system control when investigating modality effect. Therefore, both experiment yielded different results.

From those contrastive results, one element that should be taken into account is under what condition modality effect will be obtainable. The context of the experiment can also have a significant effect to the results. Several theories have addressed the circumstances under which presenting information in multiple modalities may assist more learning from educationally realistic materials than laboratory settings (Ginns, 2005). In addition, another contributing element why the different result often occurs in modality effect is system control vs. learner control. Some studies used system control and other studies used learner control. This leads to different outcomes. As noted from many empirical researches, interactivity is important principle in multimedia learning. Mayer (2001a) called interactivity as interactivity principle and segmentation effects. One could characterize the interactivity principle if learners can interact with the learning material and they gain superior learning outcomes from this interactivity processes. McLoughin and Oliver (1995) as cited in (Ertelt, 2007) contend that interaction is in the sense of giving learner control over the pace, sequence, and form of instruction. Consequently, interactivity can be an important factor in a wide range of learning scenarios. This involves focusing on learner control and engagement. And one of the variant in the interactivity is pacing although both terms (pacing and interactivity) seems to be ambiguous sense (Ertelt, 2007).

Research on pacing and segmentation in multimedia instruction has provided inconsistent results. Whereas some authors have obtained positive effects for learner-controlled pacing and segmentation (Ertelt, Renkl, & Spada, 2005; Mayer & Chandler, 2001; Mayer, Dow, & Mayer, 2003), others found limitations of the pacing and segmentation effects or even a reverse effect with system-paced instruction being beneficial for learning (Moreno & Valdez, 2005; Tabbers, Martens, & Van Merriënboer, 2004). It is believed from many studies (for example, Tabbers & de Koeijer, 2010) that learner control helps learners dealt with complexity and stimulates cognitive processing because students might be more actively involved in multimedia instructions.

2.3 Motivational Beliefs: Task Relevance and Self-Efficacy

The Keller's (2010) ARCS model suggests that learning instruction can yield more challenging experiences from motivational constructs on the basis of valuing the task and expectation (Eccles & Wigfield, 2002) of being capable and successful on accomplishing the tasks. If it is connected to the instructional design, we must get learner's attention at initial stages. Then, we can connect it with something useful, important, and meaningful to establish relevance. If we can accomplish this step, we will get value and this is good starting point for enhancing learner's motivation and engagement. After that, the learners are expected to have confidence on succeeding what we are asking for. Finally, if learners are able to accomplish the tasks, all will feel satisfied with the learning process and this can lead to impact learning outcomes.

There are many empirical studies which were undertaken in ARCS model to build and measure motivational effects on learning. Some of them show positive effect between motivation and learning outcomes. For instance, the study conducted by Song and Keller (2001) which used ARCS to measure the effectiveness of Computer-Assisted Instruction (CAI) on the dynamic aspects of motivation. The result indicates overwhelmingly positive outcomes. A small different result was resulted from Van der Meij 's (2008) study. Van der Meij (2008) used the ARCS model to design a motivational agents for a tutorial. The finding of the study suggests that only a small positive effect

on motivation and no effect on learning outcomes existed. Further, he contends that a wide range of factors may influence such results: high initial levels of motivation, low task difficulty perceptions, and the ceiling effect on resulting motivation.

In self-regulated learning, motivational beliefs hold an important role. Pintrich (1999) used three kinds of motivational beliefs to examine the use of self-regulatory strategies. They are: (1) self-efficacy beliefs, (2) task-value beliefs/task relevance, and (3) goal orientation. Self-efficacy is different from self-concept (Bong & Skaalvik, 2003; Zimmerman, 2000). Self-efficacy relates to judgment of one's capabilities to do academic tasks (Pintrich, 1999) while self-concept is defined as the totality of individual's thoughts and feelings having reference to himself as an object (Rosenborg, 1979 as cited in (Bong & Skaalvik, 2003). According to Bandura (1977) as cited in Bong and Skaalvik (2003), self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. In other words, self-efficacy considers more important what someone believe they can do with whatever skills and abilities they may possess.

Task relevance is also useful to increase student's motivation. As described in Keller's ARCS model, relevance relates to valuing our task with meaningful task and engagement activities both for present and future values. If students realize that their task is relevant with their academic and future demands, they will be more motivated to accomplish the given tasks.

3. Research Questions

This study was aimed at investigating the effectiveness of video and tutorial to support understanding of a procedural task in text formatting. In particular, this study was designed to compare students' learning outcomes and motivational beliefs from on-screen videos and tutorial. Based on the theoretical considerations, therefore, three research questions were addressed:

a. Do the students who are using video yield higher learning outcomes than those using tutorial?

In this study, it is hypothesized that learners who are using video instruction will gain higher learning outcomes than those who are using tutorial. This assumption is based on the modality effect of multimedia learning (Mayer, 2002; Moreno & Mayer, 1999; Mousavi, et al., 1995) who postulate that there is a more effective cognitive capacity from presenting information both in auditory and visual modes rather than in single channel.

b. Do students in the video condition have higher motivational gains (i.e. task relevance and selfefficacy) than those in manual condition?

The motivational gains compare participants' feeling and beliefs prior and after training. These numbers were then counted as motivation before and motivation after. In this research, it is predicted that the students in video condition will be more motivated than students in manual conditions because they use not only text and pictures, but also voice-narrated instructions/voice principle of multimedia learning (Linek, Gerjets, & Scheiter, 2010; Mayer, 2005). This principle suggests that people learn better from a standard-accent voice than foreign-accent voice or from human-voice rather than machine-generated voice.

c. Do conditions affect perceptual mood of the participants?

The mood was measured during training by presenting a model pictogram from Read (2008). Five smileys are presented: happy, certain, neutral, uncertain and sad. A positive mood will be given a score for those who chose "happy" and "certain" and a negative mood will be scored for those who have "uncertain" and "sad". It is expected that students' who were using video would have more a positive mood.

4. Method

4.1 Participants

The participants of this study were 62 Indonesian 8th grade students (mean age 14.9 years) from Junior High School of SMP N 30 Bandar Lampung, Indonesia. The students were randomly assigned across conditions. There were 14 male and 17 female in experiment (video) group and 12 male and 19 female in control group. Gender distribution across conditions did not significantly differ. The participants learned the basic of Word during lessons of technology, information, and communication (TIK). Also, when asked to make school report, they used Word. There were two students who did not follow retention test: one in experiment and one in control group.



Figure 1. Participants in tutorial (left side) and video (Right side)

4.2 Instruments and Learning Materials

The instruments used for this study were paper-based tutorial, video, practice materials, questionnaires and test.

a. Paper-based tutorial

Tutorial is very useful and suitable for novice learners so the use of tutorial should be motivating. What is more, tutorial is self-explained material without any teachers. This requires that tutorial is made as clear as possible with direct action of the users. Minimalism (Carroll & Van der Meij, 1998) and the four component model (Van der Meij & Gellevij, 2004) were done as a fundamental design construct for this tutorial. Thus, the students were also provided by goals, prerequisites, feedbacks or reactions for their actions and warnings for unwanted situations in the tutorial. Both theories provide users or learners with succinct actions and task oriented. It is then combined with some principles in multimedia learning and cognitive theories for multimedia learning (Mayer, 2001a, 2001b), especially multimedia and contiguity principle to maintain split attention effect (Kalyuga, Chandler, & Sweller, 1999).

Considering some principles in multimedia learning was required to avoid or reduce extraneous cognitive overloads and promote learner's mental building model or germane cognitive load (Sweller, et al., 1998). This was done by using worked-out example. Worked-out example is presented by stating problem formulation, steps of solution, and the end solution. Thus, it is expected that the learners are able to concentrate on the solution and establish understanding (Ertelt, 2007). There have been numerous studies suggesting that worked-out examples have superior learning outcomes (see e.g.Atkinson, Derry, Renkl, & Wortham, 2000; Atkitson, 2002; Renkl, 2002)

The goal of the tutorial is making the users prompted to the succinct procedures and action oriented in text formatting. To do so, screen captures were used to easily prompt learners about the (resemble) real object or actions. This method has been proven to have positive outcomes. Van der Meij and Gellevij (2004) postulate that screen captures is the best way to avoid cognitive load, reduce extraneous load, and stimulates deep cognitive processing. They maintain that the role of screen capture in the manual can be used to: direct and switch attention, develop a mental model of the computer application to be learned, verify screen states, and identify or locate window elements and objects. Moreover, the use of screen capture can prompt mental model development and allow for the confirmation of task solving states (Gellevij et al, 2002 as cited in (Van der Meij & Gellevij, 2004).



Figure 2. Tutorial Screen Captures

b. Video

The interface of the video website mainly consists of two parts. In the left side, there will be a navigation lists closely functioned as a table of content. The right side is window of displaying videos. If the students clicked on a title in the left side, the corresponding video appears on the right side (see Figure 3). The homepage served the same function as table of contents in paper-based tutorial. The homepage was designed based on the chapter of the tasks in text formatting. Every chapter starts with an introduction page. This was called *Read page*. In this introduction, participants would be presented the problems and their solutions briefly. Then, under introduction chapter, there will be content chapter in which the students were required to execute some tasks related to the video being presented. This page was called a *Task page*.

Not many authors or video instruction specialist made clear and direct procedures or strategies in making video demonstration for learning purposes. More clear guidelines in the

recorded demonstration were made by Plaisant and Shneiderman (2005). They recommend ten guidelines to be taken into considerations when designing video recorded instruction: (1) provide procedural or instructional information rather than conceptual information; (2) keep segment short; (3) ensure that the tasks are clear and simple; (4) coordinate demonstrations with text documentation; (5) use spoken narration; (6) be faithful to the actual user interface: do not shrink the screen; (7) use highlighting to guide attention; (8) ensure user control; (9) keep file sizes small; and (10) strive for universal usability.

The narration in the video was also considering the speaker or gender effects (Linek, et al., 2010) and voice principle as personalization effect in advanced multimedia principle (see Mayer, 2005). According to voice principle, people will learn better if dynamic visualizations are accompanied by narration that is presented in standard accent rather than foreign accent or with human voice rather than a machine-synthesized voice (Mayer, 2005). Linek et al. (2010) then question whose voice is preferably used in the narration. The study suggests that learners achieved better learning outcomes when the narration was presented by a female speaker rather than a male speaker irrespective of learners' gender, although this individual preference had no significant impact on learning outcomes. Considering all the voice principle and speaker/gender effects, we used Indonesian woman voice as the narrator of the video demonstration.

The videos were displayed and played with using HTML program attached on the video website. Because this study is the extended replication study from Rijpkema (2011), the basic structures of video website from Rijpkema (2011) were employed. Only small differences appear in the background of the interface to make it nicer and look appealing. The other difference is of course in the language instruction of video content. The video website was made to make the learners easily access the video files. The video website was described on the following figure.



Figure 3. The interface of video website

As noted from many empirical researches, interactivity is important principle in multimedia learning. Mayer (2001a) defines interactivity as interactivity principle and segmentation effects. One could characterize the interactivity principle if learners can interact with the learning material and they gain superior learning outcomes from this interactivity processes. McLoughin and Oliver (1995) as cited in (Ertelt, 2007) contend that interaction is in the sense of giving learner control over the pace, sequence, and form of instruction. Consequently, interactivity can be an important factor in a wide range of learning scenarios. This involves focusing on learner control and engagement. And one of the variant in the interactivity is pacing although both terms (pacing and interactivity) seems to be ambiguous sense (Ertelt, 2007). Therefore, in this video website player control was attached at the bottom of the video display window to facilitate learners' interactivity. We call it as *player or learner control*. Player control allows learners to play, pause, replay, and skip the playing video. Also,

learners can adjust or control the volume as they want. It is believed from many studies (for example, Tabbers & de Koeijer, 2010) that learner control helps learners dealt with complexity and stimulates cognitive processing because students might be more actively involved in multimedia instructions.



Figure 4. Player Control

There are many ways of highlighting in this video. Cursor clicks either in sounds or visual and callouts representations can mediate students' awareness in multimedia learning. Highlighting and zooming were also used to get learner's attention and allow them to mediate cognitive processing as described on the following figures.







c. Practice Files

Practice files were made to engage users and invite users to directly involve in training. In these practice files, the participants were required to accomplish all (sub) tasks related to text formatting: adjusting right margin, adjusting left margin, indenting citations, indenting new paragraphs, improving lists in the text, styling title, styling subtitle or sections, creating an automatic Table of Contents (TOC), finding a text by using an automatic TOC, and updating TOC.

The practice files for video condition and manual condition are identically content structured, but files were different. In manual condition, the participants were doing practice while they read the instruction in the tutorials ("see and do" almost at the same time). For example, when the instructions in the tutorial were requested the users to open file "lumba-lumba", the users were recommended to follow this instruction and follow the next steps. In video condition, the participants were instructed to practice after they finish watching the video.

d. Questionnaires

Questionnaires were made for motivational measurements before training, during training, and after training sessions. The questionnaires were made by using a 7-point Likert scale with 1 point meaning "completely disagree" and 7 point meaning "completely agree". Participants were asked to give a cross on this scale. A cross midway (4 point) can be regarded as a neutral position of

the statement. All the questionnaires in both conditions were presented on paper. The participants can use pen, pencil, or small board marker to give their responses on the questionnaire as long as it was readable and in a clear position or direction of the options.

Personal characteristics questions were given to the participants in the *pretest session* to know their name, gender and date of birth. The motivation questionnaires contained 3 questions per training task, for a total of 6 tasks. The first is experience question ("Do you ever have this problem?"). The second is asking task relevance (How often do you want to solve this problem?"). For these questions, the Cronbach's alpha was found satisfactory (0.88). The third is requesting self-efficacy (How well do you think you can solve this problem?"). For self-efficacy questions, it also gained satisfactory in Cronbach's alpha (0.86).

During training sessions, the participants were asked three kinds of questions: their mood, their motivational beliefs (task relevance and self-efficacy) and time. The participants in each condition were requested to fill in the question measures after they completed a training task. The *mood* was asked with the question "How do you feel after this task?" To answer the question, a model pictogram with some modification from Read (2008) was used. Five smileys are presented: happy, certain, neutral, uncertain and sad. A positive mood will be given for those who chose "happy" and "certain". A negative mood will be assigned for those who chose "uncertain" and "sad". In all, these questions were asked 10 times during training.

Immediately *after training*, the students are requested to answer motivation questionnaires. There are 16 questions in all, 8 questions asking task relevance and 8 questions measuring selfefficacy belief. For these questions, the reliability of Cronbach's alpha was also satisfactory (0.89) for task relevance and 0.76 for self-efficacy questions.

e. Test

Hands-on tests were used to assess students' skill performance. The test was administered before training, immediate after training, and delayed posttest. All the tests contained six questions which describe the tasks in text formatting. The post test and retention tests were made identical to the prior knowledge test (pretest). All the questions in the tests (pre-, post-, and retention tests) were accompanied by the screenshot of what would be the end right answer or actions that the participants should have. The participants had to accomplish the task in their own computer. All the tests were scored based on the following criteria. For those who completed with a correct method, 1 point was awarded. For all other alternatives (i.e. wrong method or no solution), 0 point was given. The maximum score for the test is 6.

4.3 Procedure

The experiment consisted of three phases: a pretest phase, training phase, and retention phase. All phases of the experiment were conducted in the computer laboratory room. Due to the limitation of computer, the experiment was conducted sequentially per each condition. A *pretest* phase was conducted one week before training. In this phase, the participants were tested for their specific-domain ability in text formatting, such as adjusting right and left margin, formatting text, paragraphs, enumeration, and making automatic table of content in Word. They were given maximum 20 minutes to finish the tasks

After pretest, a **training session** was conducted one week later. At first, we introduced the study and made a practice (20 minutes) for the participants, especially for those who were using video tutorials who might encounter some difficulties in using video properties. For this purpose, the experimenter also created a mini video website by which the participants can explore the properties and play the videos. In this mini video, the students were required to practice unrelated materials to that are used in the experiment and get accustomed to using the video and practice files. In this session, the experimenter also explained a little bit introductions about how the sessions would be run in specific directions, including what the participants must do. In the practice session, the participants made themselves familiar with the handling of the learning environment and properties

so that it can reduce extraneous cognitive load caused by unfamiliar learning environment and properties (see for example, Mayer & Moreno, 2003; Sweller & Chandler, 1994; Sweller, et al., 1998). Next, the participants continued to self-training with video and tutorial. The training sessions occurred maximum 2 hours with 10 minutes break time in between. Immediately after training, the participants in both conditions were given a motivation questionnaire. Finally, after they completed the motivation questionnaire, the participants should finish immediate posttest in 20 minutes. Before going home, the experimenter told the participants to come again one week later to get new materials.

The third phase is **Retention Test**. This session was conducted one week after training sessions and posttest. The time, the number and the format of questions in the retention test were identical to both pretest and immediate posttest. When conducting retention test, the participants did not know that they would be tested. They were just informed by the experimenter that they would have new materials regarding text formatting. The video and its practice files were not available between training sessions and retention test.

4.4 Data analysis

The data of this experiment study was analyzed by using ANOVA .All the analysis had been set up for significant level (alpha) 0.05 (two-sided). Pre-test, post-test and retention test scores were treated as repeated measures. To know the strength of the relationship between two measures, Cohen's *d* statistics was employed as the effect size. The small effect size is denoted by Cohen's *d* = 0.2, medium for *d* = 0.5, and large for *d* = 0.8.

5. Result

5.1 Does video yield better scores on post-test and retention test?

As Table 1 indicates, the students almost had the same prior knowledge in text formatting. Only a slight difference was yielded from prior knowledge test measures, F(1, 60) = 1.44, p = .23. This means that we do not have to control for starting levels because the homogeneity of variances were met from this measure.

In the post-test the means from both conditions are significantly different, F(1, 60) = 6.84, p = .01 with Cohen's d = 0.45. Table 3 shows that video condition gained more skills than tutorial. In the retention test, the difference of means across conditions was also significant, F(1, 58) = 15.10, p < .001 with Cohen's d = 0.47.

Condition	l	Pre-test			Post-Test			tention	Test
	Ν	М	s.d.	N	М	s.d.	Ν	М	s.d.
Manual	31	1.23	1.08	31	3.03	1.58	30	2.97	1.47
Video	31	1.61	1.43	31	4.16	1.80	30	4.33	1.24
	Average	1.42	1.27		3.60	1.77		3.65	1.51

N= Number of students; M= Means; s.d.= Standard deviation Maximum score is 6

5.2 Does condition affect motivation gains?

Table 2 indicates that comparison between conditions on Task Relevance and Self-Efficacy before training revealed significant differences for these two measures: for Task Relevance, F(1,60) = 8.79, p = .004 and for Self-Efficacy, F(1,60) = 5.14, p = .027. Therefore, these measures were entered as covariates in the ANOVA. Task relevance after training was higher for students who were using video than those who were using tutorial, F(1, 59) = 6.58, p = .013. Students who were using video also had higher self-efficacy beliefs after training, F(1, 59) = 21.26, p < .001.

Condition		Task relevance					Self-Efficacy Belief				
		Before		After		Be	fore	After			
	N	М	s.d.	М	s.d.	М	s.d.	М	s.d.		
Manual	31	3.56	1.29	5.48	1.08	3.70	1.24	5.19	0.77		
Video	31	4.63	1.55	6.15	0.38	4.51	1.56	6.02	0.46		
	Average	4.10	1.52	5.82	0.87	4.10	1.46	5.61	0.76		

Table 2. Students' motivational beliefs (means) before and after training

N = number of students; M = mean; s.d. = standard deviation

Maximum score is 7; a higher score means a more positive appraisal

5.3 Does condition have an effect a mood?

Table 3 shows that students had largely a positive mood during training in both conditions. About two of the ten measurement instances were reported as neutral. Only one of the ten measurement instances were reported as having a negative mood. There were more students in video condition had positive moods than those in manual conditions, but the difference was not statistically significant between conditions, F(1, 60) = 2.81, p = .09.

For neutral moods, there were more students who were reported to have neutral in manual conditions than in video condition, but there has no a significant difference, F(1, 60) = 1.90, p = .17.

However, there was a statistically significant difference between conditions for negative mood, F(1, 60) = 5.76, p = .02. There were fewer students in video condition had a negative mood than those in manual condition. This signals that using video for instruction can reduce the negative moods during training.

Condition		Pos	itive	Neu	ıtral	Negative		
	N	М	s.d.	М	s.d.	М	s.d.	
Manual	31	6.48	3.01	2.68	2.36	0.94	1.15	
Video	31	7.78	3.05	1.83	2.42	0.32	0.83	
	Average	7.13	3.07	2.26	2.41	0.63	1.04	

Table 3. Mean reports of moods (frequencies) during training

N = number of students; M = mean; s.d. = standard deviation

5.4 Time on learning tasks during training

Table 4 indicates that the students in video condition took time much longer than those in tutorial condition. There was a significant difference between conditions, F(1, 60) = 114.46, p < .001.

Table 4.	Total time	(in minutes)	during training	between	conditions
TUDIC II	rotar time	(III IIIIII acco)	a a i i i g i a i i i i i i i i i i i i	secocon	contantions

		Total Time							
Condition	N	М	s.d.	Minimum	Maximum				
Manual	31	74.77	4.787	65	80				
Video	31	84.29	1.270	80	87				

N = number of students; M = mean; s.d. = standard deviation Maximum time is 110 minutes Table 5 shows that the students in video condition did much shorter time only in making Table of Content (TOC) styling Heading 1, F(1, 60) = 9.45, p = .003. There were no significant differences between conditions in making citation, F(1, 60) = .817, p = .370, making first line indent, F(1, 60) = .531, p = .469, and displaying TOC, F(1, 60) = 1.01, p = .319.

• • •		-		Time							
Tasks	Condition	Ν	М	s.d.	Minimum	Maximum					
Right Margin	Manual	31	7.00	1.21	5	9					
	Video	31	8.29	1.44	6	12					
		24		4.04	_						
Left Margin	Manual	31	7.29	1.81	5	14					
	Video	31	8.77	1.84	4	12					
Citation	Manual	31	7.71	1.49	5	10					
	Video	31	7.42	0.99	6	10					
First Line Indent	Manual	31	6.84	1.49	5	10					
	Video	31	7.13	1.64	3	11					
Enumeration (Lists)	Manual	21	6 74	1 46	Λ	10					
Enumeration (Lists)	ividiiudi	21	0.74	1.40	4	10					
	video	31	8.20	1.29	б	12					
TOC heading 1	Manual	31	9.81	2.66	5	16					
-	Video	31	8.06	1.69	5	12					
					_	10					
TOC heading 2	Manual	31	7.90	1.87	5	13					
	Video	31	9.26	1.26	7	12					
TOC display	Manual	31	7.42	1.98	3	10					
	Video	31	7.84	1.21	6	11					
		-	-		-						
TOC navigation	Manual	31	7.03	1.43	5	10					
	Video	31	9.90	1.16	7	14					
					_						
TOC update	Manual	31	7.03	1.28	5	10					
	Video	31	9.35	1.17	7	11					

Table 5. Time per task (in minutes) during training

TOC = Table of Content; N = number of students; M = mean; s.d. = standard deviation

6. Discussion and Conclusion

In this experiment, it was found that students from video condition gained more skills than those using tutorial both in the post test and retention test. As shown in Table 3, the average score in the post test gained by participants in tutorial was a 3.03 and in video condition a 4.16. Furthermore, in the retention test the video showed more rigorous and more superior to the tutorial. The mean score average in the video condition was almost twice as high as the mean average in tutorial (4.33 compared to 2.97). This difference in means indicated that the video was more effective than tutorial in text formatting from both two measures. As predicted, the video condition gained statistically significant difference in means both in post-test and retention test (see Table 1). We assume that the presence of table of content in the video website was also helpful and enabled users to navigate and explore the content of the video materials more easily. If we connect it to navigational principle from Mayer (2005), this was truly confirmed. Based on navigational principle, learners will gain better learning from navigation features. This table of content probably gave more opportunities for the participant to select learning materials they prefer. Also, providing goal or sub-goals as the name of the chapter in table of content might increase participants' learning engagement. This is called *labeling*. By using labeling, the participants were more aware of what is learned, especially for declarative knowledge. In this situation, the participants were directly

prompted to extract the relevant sub-goals and suited with their own interest. Labeling also can serve as cue for creating sub-goals (Catrambone, 1996, as cited in Ertelt, 2007). We assume that learners will have more cognitive loads when the table of content was presented without the name of the goals (for instance, just indicate chapter 1, chapter 2, chapter 3, etc.). This prediction was supported by empirical research from Ertelt (2007).

Another factor influencing the superiority of video over tutorial was perhaps due to the number of practice that the video participants did. *Practice* was meant to make sure the success of the learning tasks during training. Skills or procedural knowledge can be learned better if independent parts are taught or practiced separately and this requires repeated practice (Ertelt, 2007). In video condition, the participants practiced the tasks after watching video. In tutorial, the students also made a practice, but they practiced while they read an instruction. It is assumed that the students in tutorial were not actively involved in the instruction because they just superficially followed the instruction from the tutorial. Consequently, the students in video condition were more aware to solve the problems by more practicing with their own interest than those in the tutorial.

For motivation, as it was predicted, the video condition yielded more motivational gains both in task relevance and self-efficacy beliefs after training. At initial measure, unexpected result was shown from motivation questionnaires before training. The result indicated that there was a significant difference between conditions before training (see Table 2). However, from ANCOVA measures, the result still remained significant differences between conditions: video yielded significantly higher in both self-efficacy and task relevance after training than in tutorial. This meant that self-efficacy and task relevance rose significantly and substantially due to the training, especially video training condition.

This is the first experience for participants to use on-screen videos and even tutorial manual for learning in text formatting. Some of the participants told the experimenter and commented that they liked learning by using self-instructed multimedia as demonstrated during training. They were willing to be challenged to solve the problems by themselves. This was confirmed by their motivational beliefs after training. Most of the participants in video condition showed their position between "agree" and "completely agree" from many motivational instances after training (mean average 6. 15 for Task relevance and 6.02 for self-efficacy with maximum point a 7 for completely agree). Before training, the participants in video condition showed moderate motivational states (not far away from midpoint 4 as neutral).

Motivational gains are related to learning involvement and cognitive processing. According to cognitive-motivational process model (Vollmeyer & Rheinberg, 2006), the first mediator for the effect of motivation on learning are the related factors of duration and frequency. They contend that the time on task influences learning outcomes. From their study, the result suggested that high initial motivation led learners to spend more times on a learning task. This is called persistence. Afterwards, learners with low knowledge but they have high motivation were more persistent and hence accumulated more knowledge over time than comparable learners with low motivation. In other words, learners with high motivation in learning usually spend time longer in the learning process to make them persistent and successful on learning tasks. The finding from Vollmeyer et al. (2006) supports this study. Based on our experiment, the participants in the video condition were more motivated, spent more time on learning tasks during training, but they showed more learning gains than those in manual condition. As also predicted, the result of the study showed much more positive mood from the participants during training (see Table 3). Video condition gained statistically significant difference on negative moods. It translates that training can successfully make participants experiencing more positive perception and feelings during training and reduced negative moods. Mood was designated to show and monitor participants' motivational state of the fun, fear, frustration, anxiety and other similar feelings during training. Mood is believed to be able to influence students' motivation and concentration during learning activities.

In contrast to what was predicted, the students in the video condition did spend time longer than those who were using tutorial. As can be seen from Table 4, students in video condition at least need 80 minutes and maximum 87 minutes to accomplish 10 tasks during training. Compared to students in tutorial, students in video condition took 10 minutes longer in average to finish all tasks. Perhaps, the reason why they did spend longer to finish the tasks is due to their interactivity with video contents. This was supported from Tabbers' (2010) study who postulates that adding learner control can increase students' learning and understanding, but the learners also spent more time for using this feature. From our finding, it is also suggested that prior knowledge and the nature of the task can play an important role. It was revealed that students in video condition spent time longer for more complex tasks, but they spent less time when the tasks were not really difficult. The difficulty level was known from the complexity of the tasks that should be executed. For example, the participants both in video and tutorial showed no statistically difference in time-on-task in terms of first-line indenting task (see table 5). Perhaps, they have had enough prior knowledge in this task or the complexity of the tasks might not be as higher as other tasks.

Due to the fact that this study did not have systematic observation to know what the participants were doing with their computers during training in text formatting, further research needs to be conducted in the systematic way of measures to validate the findings. However, another question is still relevant from this phenomenon (why video condition spent time much longer than tutorial). It was predicted that player control in the video played significant role. In speculating about usage and functionalities of the player control of the video, several scenarios of using this feature are likely possible.

Scenario 1: "Playing from start to finish." Participants may process the information in the video with no look-backs. In this scenario the learners control is infrequently use. The participants were practicing the files without replaying the video.

Scenario 2: "Backtracking after difficult tasks." The content of video sometimes varies in complexity. Where some segments can easily be processed in one-click processing, other segments may require more processing effort and need replaying the video. After a complex task, participants may want to replay the complex task in the video or pause in certain parts through player control to verify understanding, or to get their bearings back. If this scenario was frequently used, the participants might spent time longer in certain tasks which might indicate as the more complex task.

Scenario 3: "Backtracking in all tasks." In this scenario, the participants may use learner control frequently after all tasks regardless the complexity of the tasks. If this scenario was used, the participants in video condition was presumably showed longer time both in average (total time) and within per tasks than the participants in tutorial.

Scenario 4: "Playing introduction only and sliding to the end." This scenario is probably only for participants who have high prior knowledge and are already acquainted with text formatting or for low-motivated learners who are lazy to watch the procedural tasks in video files. In this way, they often skip watching the procedures and directed video to the end part in order to solely executing the tasks. If this scenario is mostly used, the time will be spent much shorter than the tutorial participants, but the learning outcomes will not be easily achieved.

In conclusion, the effectiveness of comparing video instruction and paper based tutorial was successfully conducted in Indonesian context. The results suggested that video was superior than tutorial in this respective points: (1) students in video condition yielded more learning gains which were revealed from immediate post-test and retention test; (2) students in video condition had more motivational beliefs both in self-efficacy and task relevance measures after training; and (3) Participants also showed more positive mood during training. One remark for this study is that it lacked of systematic strategy to record participants' activities during training for monitoring what was going on and knowing whether students in both conditions did the tasks with right method or not.

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Appendix 1. PRIOR KNOWLEDGE TEST AND PRIOR MOTIVATION

Name: Date of birth:

Practice question

- Look at the picture "before"
- You want some words are bold
- Look at the picture "After"



The Effectiveness Comparison between Instructional Video and Paper-based Tutorial on Learning Performance in Text Formatting Never Always 1. Do you ever have this problem? 7 1 2 3 4 5 6 Never Always 2. How often do you want to solve this problem? 7 1 2 3 4 5 6 Very Very poorly well 3. How well do you think you can solve this problem? 1 2 3 4 5 6 7

- 1. Open the file "Mimpi" from the folder
- 2. Make the word "REM" and "Kegiatan siang " bold
- 3. Save the file.
- 4. Close the file.



- 1. Open the file "Serigala dan burung gagak" from the folder.
- 2. Adjust the right margin.
- 3. Save the file.
- 4. Do not close the file, you need to adjust the left margin.



- 1. You see the file "Serigala dan burung gagak" is still open.
- 2. Adjust the left margin.
- 3. Save the file.
- 4. Close the file.

Question 3- Indenting the first line of each paragraph

- Look at the picture "before""
- You want the first line of each paragraph indented
- Look the picture "after"



- 1. Open the file "Ganesha" from the folder.
- 2. Mak sure that the first line of each paragraph indented (there are three paragraphs).
- 3. Save the file.
- 4. Close the file.

Question 4- Indenting a citation to the left and right

- Look at the picture "before""
- You want a citation on both sides indented
- Look the picture "after"



	Never						Always
2. How often do you want to solve this problem?							
	1	2	3	4	5	6	7
	Very poorly						Very well
3. How well do you think you can solve this problem?							
	1	2	3	4	5	6	7

Do the task

- 1. You open the file "Naga berkepala tujuh" from the folder.
- 2. Make the citation (the fourth paragraph, the italic text) with the both side indented.
- 3. Save the file.
- 4. Close the file.

Question 5- Improving a list

- Look at the picture "before""
- You want the text right after the bold words indented
- Look the picture "after"



The Effectiveness Comparison between Instructional Video and Paper-based Tutorial on Learning Performance in Text Formatting Never Always 1. Do you ever have this problem? 7 1 2 3 4 5 6 Never Always 2. How often do you want to solve this problem? 7 1 2 3 4 5 6 Very Very well poorly 3. How well do you think you can solve this problem? 1 2 3 4 5 6 7

Do the task

1. Open the file "cerita" from the folder.

2. Make sure that the text after the bold words neatly indented.

3. Save the file.

4. Close the file.

Question 6 – Telling Word to make an automatic table of content

- Look at the picture "before""
- You want an automatic table of content created by Word
- Look the picture "after"

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Test jezelf	3	2. Nieuwsbericht					4	
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you ever have ' v often do you	this problem? want to solve this problem?	Never 1 Never	2	3	4	5	6	Alwa 7 Alwa
you ever have ' v often do you	this problem? want to solve this problem?	Never 1 Never 1	2	3	4	5	6	Alwa 7 Alwa 7
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you ever have ' v often do you	this problem? want to solve this problem?	Never 1 Never 1 Very poorly	2	3	4	5	6	Alwa 7 Alwa 7 Ve
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you ever have t w often do you w well do you t	this problem? want to solve this problem?	Never 1 Never 1 Very poorly	2	3	4	5	6	Alwa 7 Alwa 7 Ve w

Do the task

Describe briefly how you make an automatic table of content in Word

APPENDIX 2. MOTIVATION AND PRACTICE DURING TRAINING Manual

 \square You have now adjusted the right margin.



2. How did you experience this task?							
	Very						Very
	Not True						True
I liked this inquiry task	1	2	3	4	5	6	7
I liked learning new things with this task	1	2	3	4	5	6	7
This task seems useful	1	2	3	4	5	6	7
I do not need a reward. The task gave me pleasure enough	1	2	3	4	5	6	7

I found this task very interesting	1	2	3	4	5	6	7	
Thinking went smoothly	1	2	3	4	5	6	7	
The right thoughts easily came to mind	1	2	3	4	5	6	7	
With every step I knew what to do	1	2	3	4	5	6	7	
I had the feeling everything was under control	1	2	3	4	5	6	7	

What time does the clock show now? Write the time in the box below

Fill in the time \rightarrow

APPENDIX 3. POST TEST

Task 1 - 4

Open file Artis

Make sure it will look like in the example:



Have you finished?

Save the file

Do not close the file yet. You will continue this.

Check what you have done

Check these!

- $\hfill\square$ 1. The left and right margin of the entire text changed
- \Box 2. The first line of the three paragraphs indented
- $\hfill\square$ 3. The left and right side of citation indented
- □ 4. List adapted
- □ File saved

Task 5

5. Let Word make an automatic table of content

You are now in the table of content.

Make sure it will look like in the example:

Daftar isi	
1. ArtisSejarah	
2. Pangelaran-pagelaran di Artis	
3. Kesenangan dan kesedihan di Artis	
Paviliun kupu-kupu	
Kelahiran Capybara	
Beruang kutub yang mendapat salju musim panas	
4. Aktivitas dan pangelaran	
Sepatu yang bergerak	
Makan siang 2006	
Berita dari dokter bewan di kebun binatang	
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 bektar. Ini menjadi kebur	
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam	E
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jahur kerata anji. Belanda, Diattara Duklaam	
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe	
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En	Enting dalam
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En membawa barang-barang kereta api dengan mengunakan pe	Enting dalam httrepotdok, erahu kanal dan atau
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En membawa barang-barang kereta api dengan mengunakan pe sampai ke pelabuhan. Dalam buku sejarah kamu bisa memba	enting dalam htrepotdok, erahu kanal dan atau aca tentang
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En membawa barang-barang kereta api dengan mengunakan pe sampai ke pelabuhan. Dalam buku sejarah kamu bisa memba negosiasi:	enting dalam htrepotdok, erahu kanal dan atau aca tentang er Mole
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En membawa barang-barang kereta api dengan mengunakan pe sampai ke pelabuhan. Dalam buku sejarah kamu bisa memba negosiasi:	enting dalam httepotdok, erahu kanal dan atau aca tentang er Mole an dari
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1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En membawa barang-barang kereta api dengan mengunakan pe sampai ke pelabuhan. Dalam buku sejarah kamu bisa memba negosiasi: Perwakilan dari Artis menunjuk ke peta dari Peta pada tahun 1772 dan menjelaskan bahwa selata perkebunan itu adalah "Warga baru Gragt Turni Canal ini dipersempit dan dinamakan "Enterpoto Warga Artis sangat menyenanginya dan itu mer	enting dalam http://www.anal.dan.atau aca tentang er Mole an dari ips". cok". biadi
1. ArtisSejarah Empat puluh satu tahun dari existensinya- dari 1838 sampai kira-kira 1878 – Artis kaveltje untuk kaveltje dapat tersebar kearea melebihi 10 hektar. Ini menjadi kebun binatang pertama yang berumur seratus dua puluh tahun. Artis ini telah ada sejak tahun dua puluhan dalam abad ini biasa mereka ada di tempat penurunan barang di jalur kereta api, Belanda, Plantage Doklaan, bersebelahan dengan kebun binatang. Daerah ini dulu memegang peran pe pengiriman barang-barang. Sambung menyambung, kapal En membawa barang-barang kereta api dengan mengunakan pe sampai ke pelabuhan. Dalam buku sejarah kamu bisa memba negosiasi: Perwakilan dari Artis menunjuk ke peta dari Pete pada tahun 1772 dan menjelaskan bahwa selat perkebunan itu adalah "Warga baru Gragt Turni Canal ini dipersempit dan dinamakan "Enterpoto Warga Artis sangat menyenanginya dan itu mer Entrepotdok yang melewati kebun binatang seh	enting dalam httppotdok, erahu kanal dan atau aca tentang er Mole an dari ips". dok". njadi ingga

Have you finished?

Check what you have done?

Check these!

- □ 5. Table of content made
- □ File saved
- □ Cover sheet completed

APPENDIX 4. RETENTION TEST Task 1 - 4

Open file Ooit

Make sure it will look like in the example:



Are you finished?

Save the file

Do not close the file yet. You will continue this.

Check what you have done

Check these!

- $\hfill\square$ 1. The left and right margin of the entire text changed
- □ 2. The first line of three paragraph indented
- □ 3. The left and right side of citation indented
- □ 4. List adapted
- □ File saved

Task 5

5. Let Word make an automatic table of content

You are now in the table of content.

Make sure it looks like in the example:

Daftarisi

I. Datanglah Ooitl	1
2. Kemasaan	1
3. Akitivitas dan pangelaran-pagelaran	2
Pit hitam dari tanah Ooitl	2
Selamat hari natal!	2
Otot buat otot di negara Ooit	2
4. Kunjungan Ooiter.	2
Lakev	3
Gadis di meia	3
Jus wortel vang alami	3

1. Datanglah Ooit!

Tanah Ooit sudah sangat tua. Disana ada tanaman-tanaman khusus, parit yang gelap dan dalam dan istana merah muda yang besar. Dalam istana ini hidup mahluk-mahluk yang sangat menakutkan yang sebaiknya jangan kau temui. Negara ini berasal dari sebuah negara yang terdapat banyak orang-orang Ooiter. Kamu bisa menjumpai mereka dimana saja, Orang-orang Ooit sangat baik, lucu dan ada juga yang aneh.



Mereka sangat terbuka. Pada kenyataannya mereka membutuhkan kamu! Disana ada juga gerombolan Ooiter Chery yang bodoh, yang sangat menakutkan dan menyeramkan. Kemarilah! Karena ada yang mengundang untuk berperang! Siapa kamu? Akankah kau memilih ksatria yang handal? Akankah kau memilih Ridder Bully? Bacalah apa yang mereka katakan:

> Saya, seorang prajurit kebangaan, marilah semua orang yang terbaik dari Ooit. Aku melindungi, mempertahankan, dan menyerang jika perlu. Aku akan berjuang untuk kaum perempuan dan amal. Saya, satria memalukan, senang untuk mengangu semua

Are you finished?

Check what you have done?

Check these!

- □ 5. Table of content made
- □ File saved
- □ Cover sheet completed

APPENDIX 5. POST MOTIVATION

Motivation – Questionnaire after task completion



You have now completed the instructions on changing the appearance of a report in Word. You have been learning about three things:

- 1. Changing the margins of a whole text
- 2. Changing the margins for text segments such as paragraphs, citations and lists
- 3. Creating an automatic table of contents

We would like to ask a few questions about this.

The Effectiveness Comparison between Instructional Video and Paper-based Tutorial on Learning Performance in Text Formatting Date of birth..... Your name: Not Very true true I found the task important I think I will quickly forget what I learned I found the task interesting I found the ruler handy What I learned I can use for reports I found the task easy I like to make a report that looks nice I think it is important to present a list nicely I can work well with the ruler I can now make a nice list I find it important to have good margins in a text I can now make my report attractive I now know how to change the margins of a whole text I can now indent the first sentence of a paragraph I find it important to present a nice table of contents I can now tell Word how to make an automatic table of contents