Development and Evaluation of a Web-based Media Literacy Education Program with Video Editing Simulator

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Development and Evaluation of a Web-based Media Literacy Education Program with Video Editing Simulator

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和文概要

　本論文では、近年重要性を増しているメディアリテラシー教育をweb-based learning で
おこなうために、この教育領域で重要である実習演習の環境として「動画編集シミュレー
タ」を開発し、また教育内容の構造化の方法として「フレーム・モンタージュ」スキーマ
を提案し、これらを用いたメディアリテラシー教育プログラムを開発して、被験者実験に
より一定の教育効果を確認した。

　第1章では、メディアリテラシー教育の歴史および現状を概観し、特に web-based
learning でこの領域の教育をおこなうことの意義と、その際の課題が実習環境の構築であ
ることを確認し、本論文の研究目的を明らかにした。

　第2章では、本論文に関連する先行研究・先行事例をサーベイする。まず、メディアリ
テラシーの概念や教育方法論に関する諸議論を概観し、web 上での教育例を広く調査して実
習の不十分さを明らかにするとともに、動画製作の考え方を文献から整理して「フレーム」
（映像を空間的に切り取る）と「モンタージュ」（映像を時間的に組み合わせる）の重要性
を剔別し、これを「情報の切り取り」「情報の組み合わせ」として一般化する可能性を示す。

　第3章では、「フレーム」と「モンタージュ」を「情報を切り取る」「情報を組み合わせ
る」として一般化したものを「フレーム・モンタージュ」スキーマと呼び、これを用いて
メディアリテラシーの教育内容を構造化することを提案する。このスキーマを用いると、
映像メディア実習環境を生かして映像メディアにおける情報の読み方・書き方を学びなが
ら、同時に敷衍して他メディアにおける情報形成まで理解させることができる期待でき、
限られた教育時間・教材構成でメディア一般のリテラシーを教育するには有効であると想
定される。

　第4章では、「動画編集シミュレータ（VES）」について述べる。これは、Adobe Flash と
ActionScript を主に用いて構築されたシステムで、サーバからストリーミング配信される
動画ファイルを用いて、ファイルの選択、再生タイムランの指定、再生順の指定、保存な
ど、動画編集の基本作業をブラウザ上で行うことができるものである。機能的には類似し
たシステムが存在するが、本研究では教育プログラムにおける実習環境として整備されて
おり、チャットや撮影結果の共有など学習支援の機能を備えるほか、教材への例示動画の
提供なども担っており、教育目的で実用化されているところに独自性がある。

　第5章では、本研究で開発したメディアリテラシー教育プログラムの詳細を述べる。プ

ログラムは、１）テレビとメディアリテラシーの基本、２）フレーム、３）モンタージュ、４）実習の４つのレッスンで構成される。各レッスンは、a)示唆質問、b)基本的な内容の理解、c)高度な内容の理解、d)総合的なメディア・リテラシーへの拡張、e)練習問題の５つのステップで構成されている。レッスンのうち２）フレームおよび３）モンタージュでは、４）実習で提供される編集用素材動画に対応する動画ないし静止画が説明に使われ、実習への流れが用意されている。またステップのうち a)示唆質問では、学習者の学習前の意見・考え収集され、b)c)のステップで各学習者は、a)における自分の答えを参照しながら b)c)の解説を読み進めるように作られており、受動的な学習にならないように工夫されている。

　第６章では、評価実験について述べる。本教育プログラムは、大学３年生のメディアリテラシーの授業の一部として２グループの学生が受講し、学生には受講前後にメディアリテラシーに関する学力テスト、受講後には本教育プログラムに関するアンケート調査を受けてもらった。この学力テストは、４レッスン×５ステップのプログラム構造のうち、a)示唆質問と e)練習問題のステップおよび４）実習のレッスンを除く３レッスン×３ステップの９知識要素のすべてをカバーするように作られている。

　第７章では、評価実験の結果とその考察について述べる。受講者の前後のテスト点数を比較すると、２グループとも有意に受講後の得点が向上しており、全体として本教育プログラムには有効性が認められた。また知識要素ごとの比較では、当初から成績のよかった１グループの２つの要素と、d)総合的なメディアリテラシーへの拡張に属する３要素では効果を十分に確認することができなかったが、他の要素に関しては一定の教育効果が確認された。またアンケート調査からは、このプログラムの面白さ、使いやすさ、学習効果などについて、ポジティブな評価が得られた。

　第８章では結論であり、本論文が提案した教育プログラムの効果を確認するとともに、今後の課題として、「総合的なメディアリテラシーへの拡張」の要素を充実させることの必要性や、映像以外のメディア領域への教材の展開、中国語などへの展開を挙げる。

Abstract

In this study, a web-based media literacy education program including an online video editing simulator (VES) was developed. The VES is an online virtual platform that can be used for creative practice through simulating the video editing and creation process. A frame and montage schema was proposed to organize the structure of this program to teach students how all media messages are constructed. The effectiveness of this web-based program in improving participants' media literacy was then tested through an evaluative experiment.

In the first chapter of the study, the history and current status of media literacy education are surveyed. The meaning of conducting media literacy education through web-based learning is explained, and the challenge of providing a creative practice platform in a web-based system is clarified. After that, the research purpose of this study is articulated.

In chapter 2, previous studies and projects related to this study are reviewed and analyzed. First, definitions and teaching approaches of media literacy are discussed from different perspectives. Then, the inadequacy of creative practice in web-based media literacy education projects is explained through an analysis of previous similar projects. The importance of frame (selecting shots spatially) and montage (connecting shots temporally) is made explicit through analyzing the construction process of film. By way of theoretical foundation, we propose to generalize the concepts of frame and montage from the process of making a film to the selection and connection of general media information.

In chapter 3, the frame and montage schema, developed from the generalization of frame and montage (as selection and connection of information), is proposed as a means to structure the teaching materials of this program. The construction process of visual media contents is explained using this schema, accompanied by the provision of a creative practice platform through the VES. With a certain level of abstraction, the frame and montage schema can also be applied to the construction process of other types of media messages and general media information. It is suggested that the frame

and montage schema can function effectively to cover an overall understanding of media literacy despite limits of teaching time and materials.

In chapter 4, the video editing simulator (VES) is described. The VES is an online virtual platform for simulating video editing and creation processes. Through the VES, students manage the frame (selection of shots) and montage (connection of shots) to edit and create videos. In this study, the VES is developed as the creative practice portion of the educational program. In addition, learning support functions such as chatting and sharing videos created by other students are provided in the VES. One of the original features of this study is the incorporation of creative practice using the VES into a web-based media literacy education program.

In chapter 5, details of this web-based media literacy education program are described. The program contains four lessons: (1) television and the basis for media literacy, (2) frame, (3) montage, and (4) creative practice using the VES. Each lesson includes five steps: (a) suggested questions, (b) basic explanation, (c) advanced explanation, (d) extension to media literacy, and (e) exercises. Lessons 2 and 3, on frame and montage, correspond to the creative practice on the VES in that the information learned in lessons 2 and 3 is applied to the creation of videos. In step (a), suggested questions, students answer several questions related to media issues. Next, in steps (b) and (c), they study related content, comparing the explanations provided by the teaching materials to their own answers. This interactive learning process was expected to deepen students' understanding through reflection and comparison.

In chapter 6, evaluative experiment is described. This program was implemented with two groups of participants enrolled in a media literacy course for third-year university students. Before and after their participation in the program, the students' understanding of media literacy was verified through administration of a pre-test and post-test. Also, participants were asked to evaluate the program subjectively by completing a survey questionnaire. The pre-test and post-test used the same questions, so as to equalize their difficulty and cover all knowledge elements in the program structure.

In chapter 7, evaluation results are reported and discussed. The participants'

improvement from the pre-test to the post-test suggests that this program is generally effective in increasing students' understanding of media literacy. Furthermore, effects of the program structure and the frame/montage schema are confirmed through improvement in each knowledge element, as well as in the correlation between improvement on each element and total improvement. With the exception of step (d), extension to media literacy, the educational effect of all knowledge elements within the program was confirmed to some extent. In addition, the questionnaire replies indicated generally positive subjective evaluations of the program, including interest in the teaching materials, students' perceived improvement in understanding media literacy, and learning effects of the program.

In chapter 8, conclusions and suggestions for future research are presented. The web-based media literacy education program and its effects are summarized. Prospective future research areas include improving this program, evaluating it with a control group, extensions to other types of media messages, other perspectives for media literacy education, and media literacy education in China.

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Chapter 1

INTRODUCTION

1.1 Research Background

1.1.1 Importance of Media Literacy Education

With the rapid development of information technology, we are now living in a world surrounded by the media. From the emergence of newspapers to the abundant online media contents now available, the mass media occupy more and more of our daily lives. According to the Media Sentinel Survey by the Institute of Media Environment, the daily average time spent with mass media, including TV, radio, newspapers, magazines, and the Internet, increased from 319.3 to 385.6 minutes in Tokyo between 2008 and 2014.[1]

The media not only provide a wide variety of information, but also have a great influence on individuals and on society. They are one of the main sources of our information, ideas, images, and representation that inevitably shape our view of reality.[2] Roger Silverstone argues that the media are now influencing our experience so decisively that they are at the core of our capacity or incapacity to make sense of the world in which we live.[3] The media significantly shape public opinion,[4] affect political attitudes,[5] guide popular culture,[6] and determine our perceptions of the world.[7] Moreover, the media are frequently blamed for their negative influence on teenagers through advertisements for tobacco, junk food, and alcohol and excessive exposure of

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[1] *Report of Media Sentinel Survey*. Institute of Media Environment. 2010 and 2014.
[2] David Buckingham. *Media Education---literacy, learning, and contemporary culture.* Polity Press. 2003. pp5.
[3] Roger Silverstone. *Why study the media?* Sage Publications. 1999.
[4] James K. Van Leuven, Michael D. Slater. How Publics, Public Relations, and the Media Shape the Public Opinion Process. *Journal of Public Relations Research*, Vol.3, No.4, 1991. pp165-178.
[5] Georgi Fotev. C. Gregory Knight, Ivan Raev, Marieta P. Staneva (Editor). Media and Political Attitudes. *Drought in Bulgaria: A Contemporary Analog for Climate Change.* Ashgate Publishing, Ltd. 2004. pp277-288.
[6] George Comstock, Erica Scharrer. Media and Popular Culture. *Handbook of Child Psychology.* John Wiley & Sons, Inc. 2007. pp120-200.
[7] Stephen D. Reese, Oscar H. Gandy Jr., August E. Grant. *Framing Public Life: Perspectives on Media and Our Understanding of the Social World.* Routledge. 2001. pp95-105.

sexual and violent images.[8]

Owing to the ubiquitous presence of the media and their great impact on social affairs and personal lives, the importance of media literacy education should not be understated. Media literacy education teaches basic media knowledge and provides a systematic approach to further people's understanding of the media and their influence. It enables people to "access, analyze, evaluate, create, and participate variety of media messages, and helps us to build an understanding of the role of media in society, as well as essential skills of inquiry and critical thinking."[9] It enhances people's ability to analyse the information received from the media, discern useful or harmful messages, and distinguish factual statements from the (disguised) ideological agendas of the media. Media literacy education is especially important for adolescents, who are more easily influenced by violence, sexual messages, and other negative information from the mass media, which would distort their proper perception of the world. Media literacy education offers an opportunity for teens to learn the creative processes of the media and their positive and negative sides. For all these reasons, media literacy education is necessary in this information society.

1.1.2   History and Current State of Media Literacy Education

Media literacy was initially conceived in Great Britain, as a way to protect people from the negative effects of mass media and popular culture in the 1930s.[10] The first wave of media literacy education began in the late 1960s under the banner of "screen education" in Canada, but it declined by the early 1970s because of budget cuts and a return to "back-to-the-basics" or traditional education philosophy.[11] Media literacy steadily regained momentum in the 1980s and 1990s. Definitions and purposes were established and several academic organizations were founded, such as the Association

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[8] Jane D. Brown, Elizabeth M. Witherspoon. The Mass Media and American Adolescents' Health. *Journal of Adolescent Health.* Vol. 31, No. 6, 2002. pp153-170.

[9] Center for Media Literacy. *Literacy for the 21st Century, An Overview and Orientation Guide to Media Literacy Education. Edition 2.* CML MediaLit Kit.

[10] R. Kubey. Obstacles to the Development of Media Education in the United States. *Journal of Communication.* Vol. 48, 1998. pp58-69.

[11] Andersen, N., Duncan B, & Pungente, J. J. Media Education in Canada – the Second Spring. In: Feilitzen, C. von, and Carlsson, U. (Eds.). *Children and Media: Image, Education, Participation,* 1999. pp140.

for Media Literacy[12] in Ontario, Canada and the Center for Media Literacy[13] in California, USA. Governments of several developed countries started to pay attention to media literacy education and included it in their basic educational system from kindergarten to high school. Media Literacy has become an integral part of K-12[14] educational settings in Canada, the UK, and Australia.[15] [16] [17] [18] Some universities have also developed courses on media literacy education and even set up undergraduate and graduate degree programs.[19]

However, inadequacies still exist in media literacy education. First, its development is quite uneven around the world. As already noted, some countries have fully integrated media literacy education into their K-12 education system. The USA,[20] Germany,[21] Finland,[22] and Japan[23] have on-going discussion and research on media literacy, and some schools in these countries have treated media literacy as a basic education subject. In other countries, such as China[24] and Russia,[25] media literacy

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[12] http://www.aml.ca/. Extracted on February 20, 2013.

[13] http://www.medialit.org/. Extracted on February 20, 2013.

[14] K-12 education is a designation for the years of primary and secondary education, from kindergarten through grade 12, which is provided free for all children in the United States, Australia, and Canada.

[15] Akiko Sugaya. *Media Literacy—from the scene of the world* (in Japanese, Media Literacy—*Sekai No Genba Kara*). Iwanami. 2009.

[16] Pungente John. The Second Spring: Media Literacy in Canada's Schools. *Canadian Library Association.* Vol.17, No. 2, 1997. pp 9-12.

[17] David Buckingham. *Media Education⋯literacy, learning, and contemporary culture.* Polity Press. 2003. pp6-9.

[18] Luke Carmen. Media and Cultural Studies in Australia. *Journal of Adolescent & Adult Literacy.* Vol. 42, No. 8, May, 1999. pp 622-626.

[19] Cynthia L. Scheibe. A Deeper Sense of Litearcy Curriculum-Driven Approaches to Media Literacy in the K-12 Classroom. *American Behavioral Scientist.* Vol. 48, 2004. pp 60-68.

[20] Ava Katherine Ward-Barnes. *Media Literacy in the United States: A Close Look at Texas.* Department of Communication, Georgia State University. 2010. pp47-69.

[21] Gerard Tulodziecki, Silke Grafe. Approaches to Learning with Media and Media Literacy Education – Trends and Current Situation in Germany. *Journal of Media literacy Education.* Vol.4, No.1, 2012. pp44-60.

[22] Reijo Kupiainen, Sara Sintonen, Juha Suoranta. *Decades of Finnish Media Education.* Finnish Society on Media Education, Tampere University Centre for Media Education. 2008. pp16-22.

[23] Yasushi Goto. Genealogy and Challenges of Media Literacy Research in Japan (in Japanese, Nihon Ni Okeru Media Literacy Kenkyu No Keifu To Kadai). *Modern Society and Culture Research.* No. 29, 2004. pp1-18.

[24] Qinyi Tan, Qian Xiang, Jingya Zhang, Luyan Teng, Jiali Yao. Media Literacy Education in Mainland China: A Historical Overview. *International Journal of Informational Education Technology,* Vol. 2, No. 4, 2012. pp382-385.

education was introduced only about ten years ago. Chinese and Russian scholars began paying attention to media literacy only in recent years and are still in the stage of introducing foreign experiences, as they lack a substantial history of local practice. In a large number of countries, media literacy education has not started at all.[26]

Second, even among the developed countries, there are still many challenges in media literacy education. After thirty years, the field is still far from mature and has a long way to go to catch with the prosperous mass media. Some argue that media literacy education has not attracted enough attention from society in general, including schools, governments, civil organizations, and families.[27] Kellner and Share indicate that teacher training in this area is insufficient, as few teachers have adequate skills, understanding and awareness related to media literacy education and its importance.[28] Consequently, the field continues to lag behind the culture. One expert, Faith Rogow, states that substantial teaching materials and approaches are still unavailable in media literacy education.[29]

The importance of media literacy education, its limited development in most countries, and the deficiency of teaching materials and personnel even in more advanced nations all suggest the importance of formulating new teaching approaches to effectively promote media literacy education.

1.1.3   Web-based Learning for Media Literacy Education

With the development of information technology, the popularity of personal computers, and the explosive growth of the World Wide Web, web-based learning began

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[25] Fedorov Alexander. Media Education and Media Literacy: Experts' Opinions. *A Media Education Curriculum for Teachers in the Mediterranean.* Vol. 1, 2003. pp 1-17.
[26] David Buckingham. *The Media Literacy of Children and Young People.* Centre for the Study of Children, Youth and Media Institute of Education, University of London. 2005. pp33-55.
[27] Q. Tans. Media Literacy Education in Mainland China: A Historical Overview. *International Journal of Information and Education Technology.* Vol. 2, No. 4, August 2012.
[28] Douglas Kellner and Jeff Share. Toward Critical Media Literacy: Core concepts, debates, organizations, and policy. *Discourse: studies in the cultural politics of education.* Vol 26, No. 3, September 2005. pp369-386.
[29] Faith Rogow. Shifting from Media to Literacy: One Opinion on the Challenges of Media Literacy Education. *Journal of American Behavioral Scientists.* Vol. 48, No. 1, 2004. pp30-34.

to be widely adopted. According to Tsai and Machado, web-based learning refers to educational programs using the World Wide Web in combination with information technology, with the learning materials delivered in web format.[30] The web is gaining increasing use as a learning tool and a means of delivering online learning materials.[31]

Web-based learning technologies are considered an efficient approach to promoting media literacy education, due to their capability of educating more people in media literacy with limited teaching materials. They can provide multiple types of teaching materials such as graphics, videos, and audios, which are very helpful in media literacy education to enhance students' interest and understanding.[32] They are easy to update, allowing the rapid sharing of new teaching materials and approaches. They also enable learners to access an educational program whenever and wherever they wish, reducing the cost in terms of money and time. Moreover, web-based programs are much more flexible and personalized because they can accommodate different learning styles, allowing students to learn at their own pace and in their own way.[33]

Because of the aforementioned advantages of web-based learning, several organizations attempted to conduct media literacy education through this means during the 1990s, such as Media Smarts[34] in Canada, the National Association for Media Literacy Education[35] and Center for Media Literacy[36] in the USA, the European Charter of Media Literacy,[37] and the Institute of Media Literacy Education[38] in Japan. However, all these web-based projects suffer from the same deficiency: lack of creative practice to allow interactive participation by students. For example, the Center for

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[30] Susan Tsai, Paulo Machado. *E-learning, Online Learning, Web-based Learning, or Distance Learning.* E-Learning Basics. 2007.
[31] Ronald D. Owston. The World Wide Web: A Technology to Enhance Teaching and Learning. *Journal of Educational Researcher.* Vol. 26, No. 2, 1997. pp27-33.
[32] H. Y. Chen, K. Y. Liu. Web-based Synchronized Multimedia Lecture System design for Teaching/Learning Chinese as Second language. *Journal of Computer & Education.* Vol. 50, 2008. pp693-702.
[33] M. Haag, L. Maylein, F. J. Leven, B. Tonshoff, R. Haux. Web-based Training: A New Paradigm in Computer-assisted Instruction in Medicine. *International Journal of Medicine Information.* Vol. 53, 1999. pp79-90.
[34] http://mediasmarts.ca/ . Extracted on February 27, 2013.
[35] http://namle.net/. Extracted on February 27, 2013.
[36] http://www.medialit.org/. Extracted on February 27, 2013.
[37] http://www.euromedialiteracy.eu/. Extracted on February 27, 2013.
[38] http://jmec01.org/. Extracted on February 27, 2013.

Media Literacy offers numerous articles about media literacy education on its website. Those articles express the center's understanding of media literacy, including definition, theories, history, trends, importance, teaching approaches, discussions, evolution, assessment, cases, and projects. But the website is limited to files sharing. MediaSmarts focuses on media literacy for youth, and its website has three main sections: a basic introduction of digital and media literacy, research and policy studies on media literacy, and resources for training teachers. All three sections provide only reading materials and do not contain any form of creative practice.

Creative practice is emphasized as an essential part in media literacy education.[39] [40] [41] Thoman and Jolls argued that creative practice is an important component of media literacy education for the following reasons: "It involves the application of multiple intelligences, requires active hands-on learning, increases motivation and the enjoyment of learning, reinforces self-esteem and self-expression, offers real-world practical application of theoretical concepts, and provides a way to assess student understanding of both content and concepts."[42] Only through creative practice can students gain a fully integrated understanding of the analytical materials. Despite its importance, however, creative practice is not offered by existing web-based programs for media literacy education.

1.2 Research Purpose

The purpose of this study is to create a web-based media literacy education program with two original features. First, an online video editing simulator (VES) is developed and used in this program, so as to address the lack of creative practice in

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[39] Donna E. Alvermann, Margaret C. Hagood. Critical Media Literacy: Research, Theory, and Practice in "New Times". *The Journal of Educational Research.* Vol. 93, 2000. pp193-205.

[40] Shin Mizukoshi, Toshiya Yoshimi. *Media Practice: Changing the World through Creating Media* (in Japanese, Media Practice: Baitai Wo Tsukutte Sekai Wo Kaeru). Serika Shobou. 2003. pp9.

[41] Morimune Ryuichi, Ozawa Isamu, Yamazaki Kensuke. Practice of Media Literacy Education. *Journal of the Information Processing Society of Japan.* Vol.2007, No.12, 2007. pp119-125.

[42] Elizabeth Thoman, Tessa Jolls. Media Literacy Education: Lessons from the Centre for Media Literacy. *Media Literacy: Transforming Curriculum and Teaching.* (Editors: Gretchen Schwarz, Pamela U. Brown). Blackwell Publishing Malden. 2005. pp189.

web-based media literacy education. Secondly, a frame/montage schema, based on the VES, provides a foundation for the teaching materials developed for this program. The teaching materials are designed to provide an overall understanding of media literacy.

The VES is an online virtual platform that simulates the video editing and creating process. The original videos are FLV videos, which are located in a Flash Media Server (FMS) and can be streamed through Adobe Flash Player. The VES is created as one SWF file including two core processes, video editing and streaming, implemented by controlling the original videos' timeline with Flash Actionscript. Students can select original videos and change the starting and ending time as well as the sequence. When students edit videos, several aspects of editing information are recognized and recorded by ActionScript, including sequence number, name, and new starting and ending time. When an edited video is selected from the edited video list, ActionScript restores the newly created video from the editing information and the original videos. The VES is intended to help students to experience creative processes as the "writing" component of the web-based media literacy education program.

The VES is then incorporated into the education program as a design premise. When students edit a video, they manipulate visual information on the video both spatially and temporally. Spatially, students choose the content and form of the scene or, to use the professional term, fix the *frame* of shots. Temporally, they connect shots in the preferred order to create a story; this step is called *montage* among professionals. In other words, the frame involves the selection of visual information, whereas the montage involves the connection of visual information. The present program teaches visual media literacy primarily from the perspective of explanations of frame (selection of shots) and montage (connections of shots). Second, we expand the concept of literacy to all types of media information-creating processes, applying the paired concept of selection and connection in other ways (such as to syntagm and paradigm in linguistics) from the visual media. The principles of selection/frame and connection/montage are used to explain the creation of all media information.

To evaluate the program's effectiveness, especially the VES and the program structure based on the frame/montage schema, implementation and evaluation are

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conducted. Pre-tests and post-tests, exercises at the end of each lesson, and a survey questionnaire are used for evaluation.

1.3 Research Methods

The proposed web-based media literacy education program is established through four successive stages: design, development, implementation and evaluation. Each stage has its own characteristics and corresponding research methods. The main research methods for each stage are summarized below.

1.3.1 Design

Design principles of this program include the frame/montage schema to guide an overall understanding of media literacy, the VES for creative experience, and an inquiry model and interactive learning for better educational effect.

The frame/montage schema is adopted since it explains the construction process of visual media messages such as videos and also determines the creative process of a film.[43] But moreover, the schema is not limited to visual media; it can also be applied to the creating of textual media contents such as newspapers and magazines, just as the concepts of paradigm and syntagm can be used to understanding the creation of meaning in linguistics.[44] As noted above, in the context of general media information, frame means the selection of information, and montage means connection of the selected information fragments to create meaning and a story line. After completing the program developed in this study, students are expected to understand how all media messages are constructed.

Use of the VES is designed to strengthen the understanding of the frame/montage schema for media message construction, since it should allow students to create their own videos using the frame/montage schema. The incorporation of the VES addresses the premise that creative experience should be an essential component of media literacy

[43] Jean-Claude Fozza, Anne-Marie Garat, Françoise Parfait. *Image Literacy Plant—New Art Appreciation of French* (in Japanese, Image Literacy Koujyou—France No Atarashii Bijutsu Kansyouhou, Masakazu Inubushi, Yoyu Maekawa, Shigeru Maeda Trans). Film Art Corporation. 2006. p.69.
[44] Ferdinand de Saussure. *Course in General Linguistics.* Glasgow: Fontana/Collins. 1977.

education.[45] Just as we have to acquire writing skills along with the development of reading skills, we should integrate creative practice of media along with media analysis. On the other hand, with the coming of the Web 2.0[46] era, we are not only receiving but also creating and sending information, which requires more creative knowledge, literacy, and experience. In the present program, the VES provides an interactive platform for students to simulate the process of editing and creating videos online, as the creative practice of media literacy education.

An inquiry model is a structured framework that encourages people to think about what they read and hear. It is helpful for "stimulating open questioning and encouraging students to be intellectually curious about the world."[47] It also leads to increased comprehension and greater critical thinking in media literacy education. In this program, an inquiry model is realized through suggested questions, which are presented at the beginning of each lesson with multiple-choice answer options to stimulate students' reflection on media issues.

Interactive learning is an important and effective pedagogical approach, especially for web-based learning.[48] In this program, students' answers to suggested questions in each lesson are recorded in a database. When students progress to later steps, their answers are retrieved from the database and displayed along with explanations from the teaching materials. Through this interactive learning process, students can learn by reflection and comparison. Interactive learning is also achieved through saving and playing student-created video sets in the VES.

1.3.2 Development

Based on the design principles described above, teaching materials are developed for four lessons: television and the basis of media literacy, frame, montage, and creative

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[45] *Resource Guide: Media Literacy, Intermediate and Senior Divisions.* Ontario Ministry of Education. 1989. p16.

[46] Tim O'Reilly. What Is Web 2.0. http://www.oreillynet.com.Extracted on,May 30, 2012.

[47] *Resource Guide: Media Literacy, Intermediate and Senior Divisions.* Ontario Ministry of Education. 1989. pp14.

[48] Bude Su, Curtis J. Bonk, Richard J. Magjuka, Xiaojing Liu, Seung-hee Lee. The Importance of Interaction in Web-based Education: A Program-level Case Study of Online MBA Courses. *Journal of Interactive Online Learning.* Vol. 4, 2005.

practice. Each lesson contains five steps: suggested questions, basic explanation, advanced explanation, extension to overall understanding of media literacy, and exercises.

To develop the program, Adobe Flash, Flash ActionScript, Flash Media Server, PHP code, and MySQL are used. The VES is created as one SWF file, and FLV videos located in the Flash Media Server (FMS) are provided as original videos. Teaching materials are stored in a web server and provided through PHP codes. Students' answers to suggested questions in each lesson are submitted to a database created by MySQL. In later steps, these answers are retrieved from the database and displayed with accompanying explanation from the teaching materials, again using PHP codes.

1.3.3   Implementation

After its development, this program was implemented in the Media Literacy course for third-year students in the Department of Human Communications at the University of Electro-Communications. A pre-test and post-test, exercises at the end of each lesson, and a survey questionnaire were used to evaluate the program both subjectively and objectively.

Before and after their participation in the program, students' understanding of media literacy was verified by a pre-test and post-test, which used the same questions to ensure equal difficulty. Exercises at the end of each lesson were provided to enable students to review the instructional materials, as well as to verify their comprehension of knowledge elements in that lesson. After completing the program, participants completed the survey questionnaire.

1.3.4   Evaluation

Both the objective impact and the students' subjective opinions of the program were evaluated. We collected data from the pre-test and post-test, the exercises in each lesson, and the survey questionnaire. Then the data were analyzed using SPSS to evaluate the program's impact, the program structure, and the VES.

The objective educational effect of this program is determined by the improvement

that students achieved from the pre-test to the post-test. General subjective impressions of the program can be gleaned by analyzing the survey questionnaire. The program structure includes nine knowledge elements, covered in the pre-test and post-test and in the exercises. The evaluation assesses students' improvement on each element between the pre-test and post-test, the correlation between improvement on each element and total improvement, and the results on each element in exercises. The VES is evaluated through correlation analysis between creative practice exercises and the pre-test and post-test, as well as subjective results from the survey questionnaire.

1.4 Structure of This Thesis

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1.2 Research Purpose
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2.2 Previous Media Literacy Education Projects using Web-based Learning
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2.4 Previous Projects on Online Video Editing and Creation
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⬇

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Conclusion

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Chapter 2

PREVIOUS STUDIES OF MEDIA LITERACY EDUCATION THROUGH WEB-BASED

LEARNING

2.1 Media Literacy Pedagogy

2.1.1   Definition of Media Literacy

The definition of media literacy varies among scholars, depending on their theoretical background and perspective. In 1989, Barry Duncan, a pioneer of media literacy education in Canada, suggested this definition:

> Media literacy is concerned with the process of understanding and using the mass media. It is also concerned with helping students develop an informed and critical understanding of the nature of mass media, the techniques used by them, and the impact of these techniques. More specifically, it is education that aims to increase students' understanding and enjoyment of how the media work, how they produce meaning, how they are organized, and how they construct reality. Media literacy also aims to provide students with the ability to create media products.[49]

Duncan defined media literacy from the perspective of critical understanding of the nature, techniques, construction process, and working mechanisms of mass media. Moreover, he noted that media literacy also included the ability to create and use media products.

In 1993, Rick Shepherd, a scholar in the Association for Media Literacy, improved on Duncan's definition, calling media literacy "an informed, critical understanding of the mass media. It involves an examination of the techniques, technologies and institutions that are involved in media production, the ability to critically analyze media messages and a recognition of the role that audiences play in making meaning from those messages."[50] Shepherd echoed Duncan in his inclusion of "informed, critical

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[49] Barry Duncan et al., *Media Literacy Resource Guide.* Ontario Ministry of Education, Toronto, ON., Canada, 1989. p. 6.
[50] Rick Shepherd, *Why Teach Media Literacy.* Teach Magazine, Quadrant Educational Media Services, Toronto, ON, Canada, Oct/Nov 1993.

understanding of the mass media" but added "the ability to critically analyze" and "recognition of audience's role in making meaning" to the definition media literacy.

In the United States, W. James Potter, offered his understanding of media literacy from a cognitive perspective in 2004: "Media Literacy is a perspective from which we actively use to expose ourselves to the media and interpret the meaning of messages we encounter."[51] According to Potter, the perspective from which we understand and use media messages is based on our knowledge structure of media, which encompasses "media effects, media contents, media industries, real world, and the self."[52]. In order to build our knowledge structure, skills including "analysis, evaluation, grouping, induction, deduction, synthesis, and abstracting"[53] are required. Potter viewed media literacy as a perspective from which to deal with media and interpret media messages systematically and academically.

The most widely used definition of media literacy, as "the ability to access, analyze, evaluate, and communicate media messages in a wide variety of forms," was proposed by the participants of the 1992 Aspen Media Literacy Leadership Institute.[54] The Centre for Media Literacy expanded this definition with an emphasis on required skills:

> Media literacy is a 21st century approach to education. It provides a framework to access, analyze, evaluate, create, and participate messages in a wide variety of forms---from print to video to the Internet. Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression necessary for citizens of a democracy.[55]

From the definitions cited above, we can perceive that media literacy involves critical analysis, understanding, proper use of the media, and creative practice of media products. When we separate the two words, literacy refers to the ability to read and write,[56] and media are the primary means of mass communication (television, radio,

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[51] W. James Potter. *Media Literacy*. 4th Edition. Sage Publications, Inc. 2008. p11.

[52] W. James Potter. *Media Literacy*. 4th Edition. Sage Publications, Inc. 2008. p14.

[53] W. James Potter. *Media Literacy*. 4th Edition. Sage Publications, Inc. 2008. p15.

[54] Elizabeth Thoman and Tessa Jolls. *Literacy for the 21st Century. An Overview and Orientation Guide to Media Literacy Education*. Centre for Media Literacy. 2003. p42.

[55] Thoman and Jolls. *Literacy for the 21st Century. An Overview and Orientation Guide to Media Literacy Education*. Centre for Media Literacy. 2003 pp18.

[56] Oxford Dictionary. http://oxforddictionaries.com/definition/literacy. Extracted on March

newspapers, etc.) regarded collectively.[57] Accordingly, media literacy can be understood as the ability to read and write messages in all types of media. "Reading" corresponds to the critical analysis, understanding, and proper use of media messages, whereas "writing" corresponds to the creative practice of media products.

More specifically, reading media involves analysis of the process of constructing media content including its language, grammar, and elements; understanding the information, social, commercial, or political implications involved in media content; the mechanism of how media messages achieve their influence on contemporary culture and on individuals; and the audience's role in constructing meaning from media content. But *writing* as well as reading media—i.e., the practice of creating media messages—can help students to acquire a more personal and deeper understanding of media. Further, with the development of information technology and social networking, anyone can produce and send media messages. Skill in composing media messages can foster individuals' awareness and encourage them to fulfill responsibly their role as an information producer and sender.

From another perspective, media literacy has two aspects: knowledge and skills. Originally, knowledge referred to the theoretical or practical understanding of a subject,[58] and skill meant the ability to do something well.[59] People who are media-literate must have not only a wealth of media knowledge, but also good skills in reading (understanding) and writing (creating) media messages. Taking the concept of "frame" as an example, from the perspective of knowledge, students need to know what a frame is and how it functions in visual media. From the perspective of skill, students must know how to use the frame, including understanding its effect on viewers and use of the frame when shooting video.

31, 2013.

[57] Oxford Dictionary. http://oxforddictionaries.com/definition/english/media. Extracted on June 30, 2013.

[58] http://www.oxforddictionaries.com/definition/english/knowledge. Extracted on September 20, 2014.

[59] http://www.oxforddictionaries.com/definition/english/skill. Extracted on September 20, 2014.

2.1.2 The Key to Media Literacy

The core concept of media literacy is that "all media messages are constructed."[60] All media messages that we receive were created by someone or some organization: pictures are taken, words are written, sound is synthesized, and a creative designer put them together. Taking a newspaper as an example, the author selects and connects words to create an article; pictures are taken by a photographer and then selected by an editor, with consideration of the picture's effectiveness, shot sizes, angles, and colors. Further, varied layouts and page location are also considered in order for each article to have a powerful influence.

Len Masterman says that "media do not present reality as simple reflections of the world, because media messages are created, shaped and positioned through a construction process. The construction process involves producers' decisions about what to include or exclude and how to represent the included contents"[61]. Henry Giroux, a theorist of critical pedagogy, states that "media messages need to be demystified and revealed as a historical production both in their content, with their embedded value or unrealized claims, and in the elements that structure their forms."[62] Through the process of constructing media messages, selected information is connected, a certain meaning is created, and the producers' purposes and implications are communicated. In this way, media messages are endowed with certain information, implications, and influence.

During the process of reading and writing media messages, the most basic foundation is to understand how media messages are constructed.[63] When students understand the construction process of media messages, they can easily understand the purposes, implications, and influence of media information. Furthermore, only when

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[60] Centre for Media Literacy. *Literacy for the 21st Century. An Overview and Orientation Guide to Media Literacy Education.* 2003. p45.

[61] Len Masterman. The Media Education Revolution. *Canadian Journal of Educational Communication.* Vol.22, No.1, 1993. pp1-14.

[62] Henry Giroux. *Education and Cultural Studies: Toward a Performance Practice.* Psychology Press. 1997. pp79-80.

[63] Douglas Kellner, Jeff Share. Toward Critical Media Literacy: Core Concepts, Debates, Organizations, and Policy. *Discourse: Studies in the Cultural Politics of Education.* Vol. 26, 2005. pp. 369-386.

students have mastered the process of constructing media messages can they effectively create their media products.

Therefore, it is essential for a media-literate person to know how media messages are constructed. Kellner and Share propose taking this issue as a starting point for implementing media literacy education.[64] Understanding how media messages are constructed assists us in reading and writing media messages and in understanding how media represent reality, shape our view of the world, and affect our daily lives.

2.2 Previous Media Literacy Education Projects using Web-based Learning

As mentioned in section 1.1.3, web-based media literacy education projects have been developed in various forms for different audiences, mainly by institutes or associations for media literacy. I reviewed all the websites, open courses, and web-based projects related to media literacy education that I could find through the Internet and available academic databases. Some representative works and projects are analyzed here.

Several institutes of media literacy provide teaching materials through their websites, such as the National Association for Media Literacy Education,[65] Media Awareness Network,[66] Australian Children's Television Foundation,[67] and Association for Media Literacy.[68] These websites generally provide theories, curricula, lesson plans, approaches, and classroom activities to teach media literacy. For example, on the website of the Action Coalition for Media Education[69] [Figure 1], curricula, lesson plans, classroom activities, and teaching materials are provided, such as "Our 21st Century Media Culture: Eight Shifts," "Tackling The Beer Barons," "Challenging Big Media News and Censorship," "Questioning Media: 10 Basic Media Education Principles," and "Teaching the Language of the Image: 24 Persuasive Techniques."

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[64] Douglas Kellner, Jeff Share. Toward Critical Media Literacy: Core Concepts, Debates, Organizations, and Policy. *Discourse: Studies in the Cultural Politics of Education.* Vol. 26, 2005. pp. 369-386.
[65] http://namle.net/. Extracted on April 23, 2013.
[66] http://mediasmarts.ca/. Extracted on April 23, 2013.
[67] http://www.actf.com.au/. Extracted on April 23, 2013.
[68] http://www.aml.ca/. Extracted on April 23, 2013.
[69] http://acmecoalition.org/free_acme_teaching_resources. Extracted on April 23, 2013.
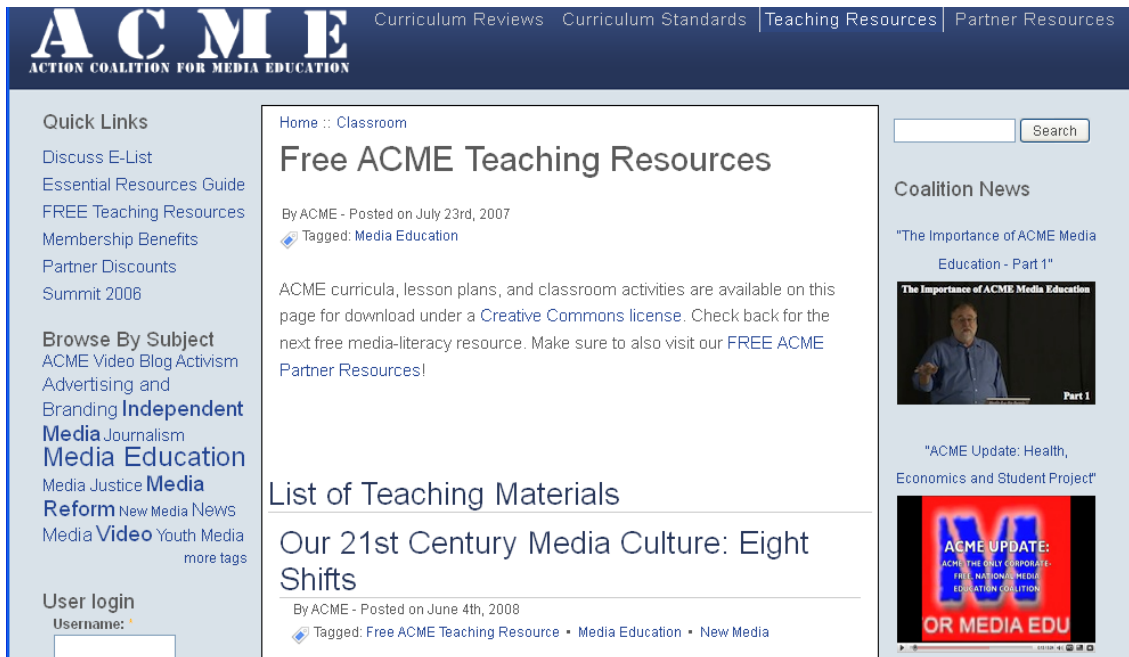
Figure 1. Action Coalition for Media Education Website

However, teaching resources provided by these institutes' websites generally use text or PDF files, and a few are using videos. It is still very difficult for them to provide a platform for creative practice as part of their educational function.

A web-based learning project, Tate Movie,[70] provides media literacy education through two sections: a "Tate Kids Get Inspired" section for children to create their own gallery and make artworks, and an "Animate It" section to teach how to make an animation using videos, pictures, and directions. "Tate Kids Get Inspired" aims to stimulate children's creativity and inspiration through creating paintings online. "Animate It" provides videos to explain the animation creating process, including computer settings, accessing software, animation, competition, and studio secrets. [Figure 2].

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[70] http://www.tatemovie.co.uk. Extracted on May 4, 2013.

Figure 2. The Tate Movie Project

The main purpose of this project is to inspire students' ideas, activity, and creativity through making paintings and learning the animation creation process, but not to help them understand how media information is created or to improve their media literacy. Further, this project provides explanations about how to create animations, but does not provide a platform for students to create animations online.

Another web-based project, Admongo, [71] developed by the Federal Trade Commission, teaches advertising literacy for teenagers. It encourages students to think through three main questions about advertisements—"Who is responsible for the ad?", "What is the ad actually saying?", and "What does the ad want me to do?"—through video games and lessons involving interactive questions, pictures, and videos. Students can apply critical thinking skills through a series of interesting interactive games [Figure 3].

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[71] http://www.admongo.gov/. Extracted on May 4, 2013.

Figure 3. Admongo, a Website to Teach Advertising Literacy

This project is very helpful and interesting in teaching advertising as a part of media literacy education, but it is limited to the field of advertising. Also, no platform for creative practice is provided.

In Japan, Sakai has developed a web-based learning program for teachers to learn media literacy.[72] This program enables teachers to interact with media creators, media literacy researchers, and experienced media teachers to learn media literacy through six steps: (1) What is media literacy? (2) Information receiver; (3) Information sender; (4) The perspective of researchers; (5) Lessons from experienced teachers; and (6) Discussion. This program consists mainly of PDF files, video sharing, and chatting. Still, no platform for creative practice is provided.

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[72] Shunsuke Sakai, Kazuru Yaegashi, Shinichi Hisamatsu, Yuhei Yamauchi. Development of an Online Learning Program for Teachers to Learn Media Literacy. *Journal of the Japan Society for Educational Technology.* Vol. 30, 2006. pp113-123.
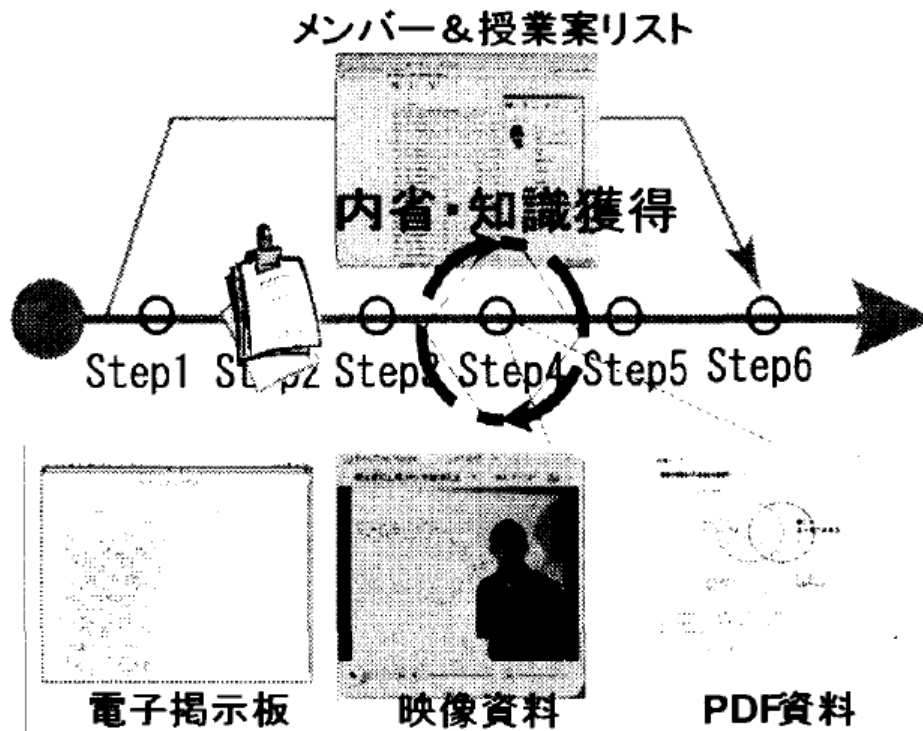
Figure 4. Sakai's Web-based Learning Program for Media Literacy

This review demonstrates that most web-based projects for media literacy education are limited to instructional information and some discussions. Creative practice platforms are rarely if ever included in such educational resources.

2.3 Previous Studies of Creative Practice in Media Literacy Education

2.3.1. The Importance of Creative Practice in Media Literacy Education

As explained in section 2.1.1, media literacy includes the ability to read and write media messages. "Reading" refers to the critical analysis, understanding, and proper use of media messages, and "writing" refers to the creative practice of media products.

Sholle and Denski indicate that in media literacy education, creative practice is as important as analysis, just as writing is as important as reading, because only if students have experience in creating media contents can they understand the analytical

materials deeply. [73] Also, according to Ontario's *Media Literacy Resource Guide*, creative activities are essential components of media literacy education and should be integrated with formal media analysis.[74] Furthermore, the Centre for Media Literacy emphasizes the importance of creative practice as a component of media literacy education for following reasons: "involving the application of multiple intelligences, increasing motivation and the enjoyment of learning, generating new avenues for alternative representations, creating outlets to communicating beyond the classroom and interact with others, and offering practical applications of theoretical concepts."[75] When we learn to drive a car, practical experience is indispensable after we have obtained theoretical knowledge; the experience of creative practice in media literacy is equally indispensable.

However, Patrick Verniers, a scholar of media literacy, has observed that creative practice is the most challenging element in media literacy education, especially when delivered through a web-based learning system.[76] As we saw in reviewing previous web-based media literacy projects in section 2.2, an online platform for creative practice is not easy to implement.

2.3.2. Previous Projects of Creative Practice for Media Literacy Education

A search of the Internet and academic databases located a few web-based creative practice platforms related to media literacy. My Pop Studio[77] is a creative platform for teenage girls to strengthen their critical thinking skills about music, television, magazine, and digital media contents through creative practice. Interactive activities encourage students to deconstruct and create media productions. Videos, flash animations, games, quizzes, and blogs make the platform fun and educational [Figure

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[73] D. Sholle, S. Denski. Reading and Writing the Media: Critical Media Literacy and Postmodernism. In C. Lankshear & P. L. McLaren (Eds.), *Critical Literacy: Politics, Praxis and the Postmodern.* Albany, NY: State University of New York Press. 1993. pp. 297-321.
[74] *Resource Guide: Media Literacy, Intermediate and Senior Divisions.* Ontario Ministry of Education. 1989.
[75] Centre for Media Literacy. *Literacy for the 21st Century. An Overview and Orientation Guide to Media Literacy Education.* 2003. p45.
[76] Patrick Verniers. *Media Literacy in Europe: Controversies, Challenges, and Perspectives.* Bruxelles: Europe Media Literacy Education Center. 2009.
[77] http://www.mypopstudio.com/. Extracted on May 4, 2013.

5]. It is a valuable virtual studio offering opportunities to create music, magazines, television programs, and digital contents.

Figure 5. My Pop Studio

However, My Pop Studio lacks a consistent framework to integrate the creation of these four types of media into a basic explanation of media literacy. Also, no teaching materials on how to create media products are provided to support the creative platform.

In Japan, Kataoka [78] has developed a three-dimensional, web-based learning program for media education. This program includes text, tests, and video shooting practice, focusing especially on shot size, angle, and composition. This program does include creative practice, but only of video shooting [Figure 6]. To achieve a more complete educational effect with regard to media literacy, the practice of video editing

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[78] Mio Kataoka. *Study on a Three-Dimensional Web-based Learning Environment for Media Literacy* (in Japanese, Web 3D Wo Mochiita Media Kyouiku No Tame No E-learning Kyouzai Kaihatsu Ni Tsuite No Kenkyuu). Master's Thesis. Department of Human Communications, Graduate School of Telecommunication, University of Electro-communications. 2007.

and creation is also needed, and teaching materials to explain how to edit and create are required.
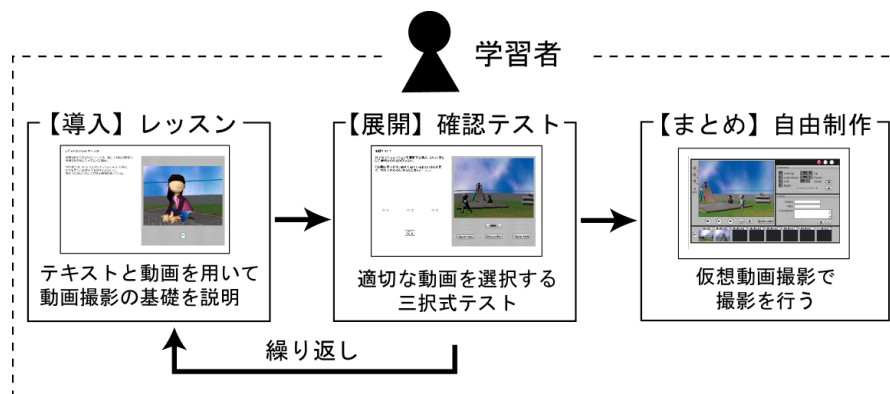
Figure 6. Kataoka's Web-based Learning System for Media Education

2.4 Previous Projects on Online Video Editing and Creation

With the vigorous development of Web 2.0 platforms and social media, more and more people are creating their own media contents and uploading them into their online space or blogs. These media contents consist mainly of texts, pictures, and videos. In this context, some websites providing video editing and creative functions have become available.

YouTube Video Editor,[79] Animoto,[80] Wevideo,[81] Masher,[82] Cell Sea,[83] and Clip Cast[84] are examples of online video editing and creation systems [Figure 7 to 10]. Using these platforms, people first upload their videos into provided systems and then edit the videos by changing the timeline and adding some captions, music, special effects, and background. Finally, they post the created videos on Facebook, YouTube, or Twitter to share with friends or download for pleasure.

[79] http://www.youtube.com/editor. Extracted on March 2, 2013.
[80] http://animoto.com/. Extracted on March 2, 2013.
[81] https://www.wevideo.com/. Extracted on March 2, 2013.
[82] http://www.masher.com/. Extracted on March 2, 2013.
[83] http://www.cellsea.com/media/vindex.htm. Extracted on March 2, 2013.
[84] http://clipcast.jp/. Extracted on March 2, 2013.
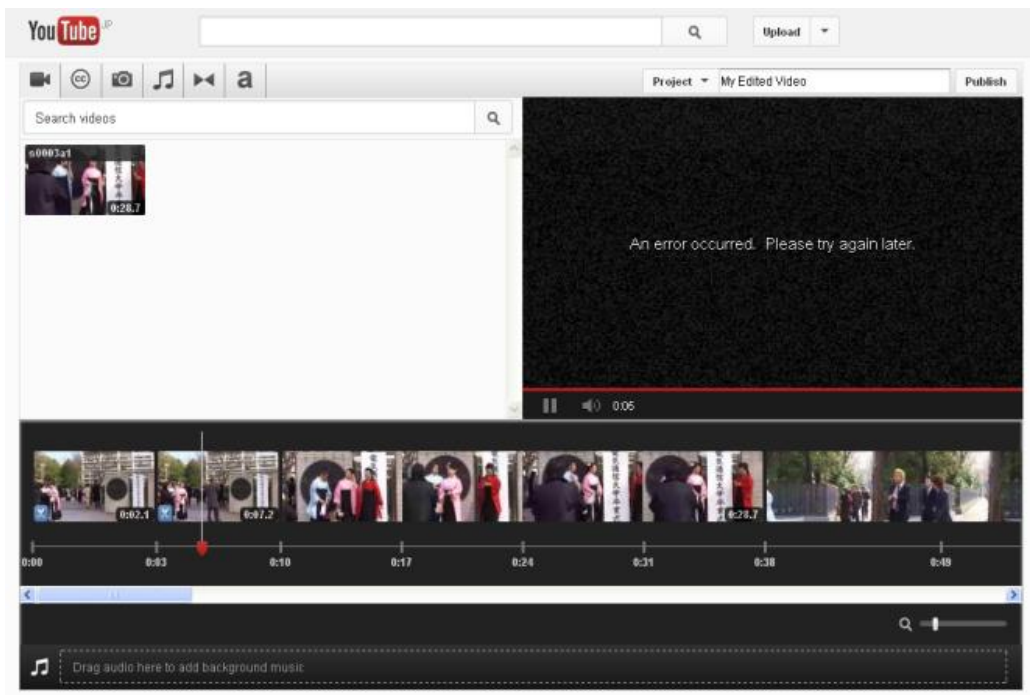
Figure 7. YouTube Video Editor

Figure 8. Masher
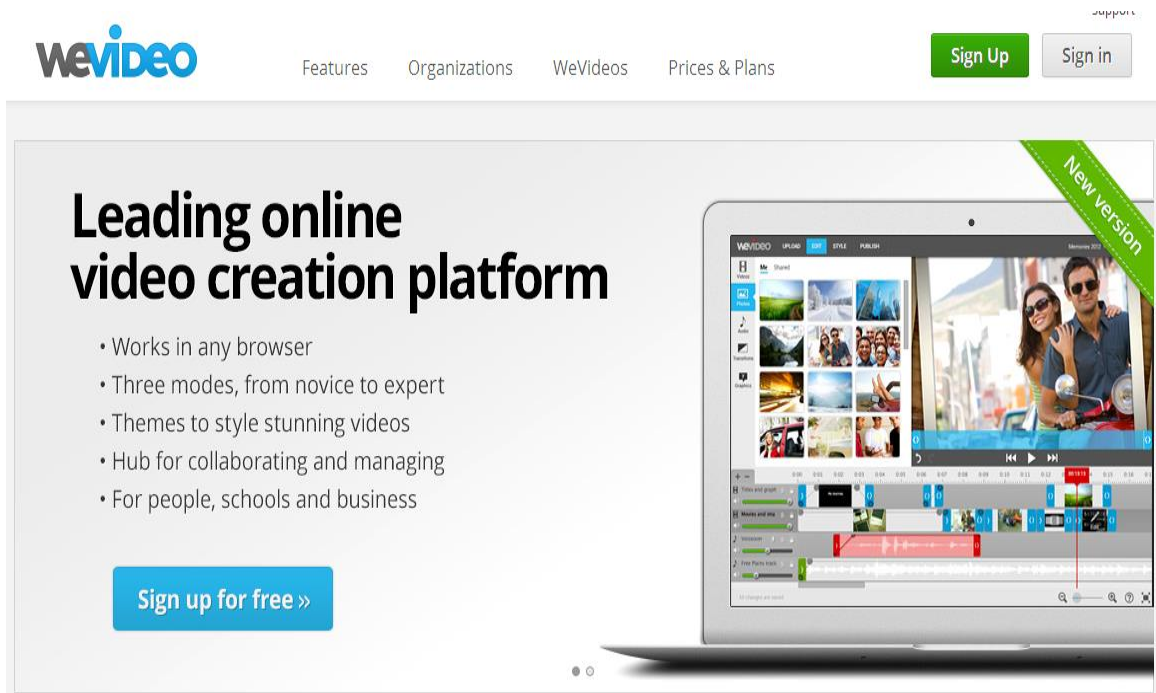
Figure 9. We Video
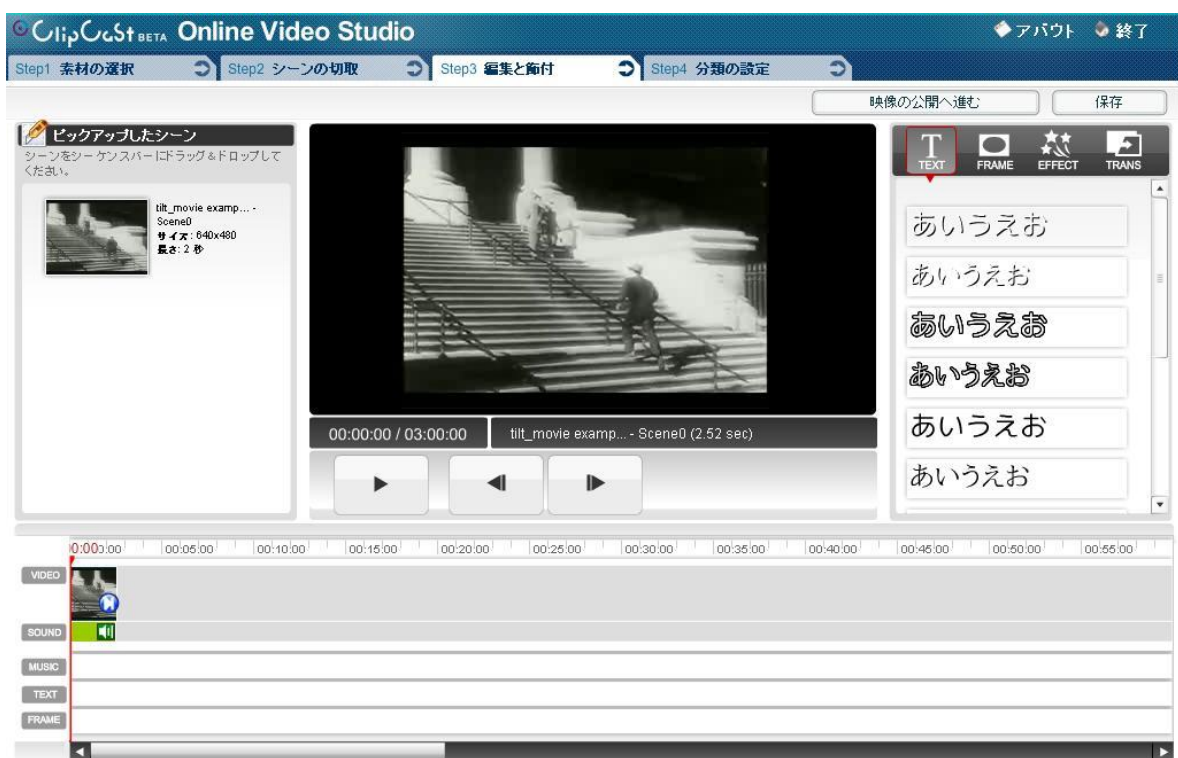
Figure 10. Clip Cast

However, these platforms are mainly for entertainment and not for education; concepts of media literacy are not communicated in the video editing and creation process. Moreover, an effective educational program must give users ample means of managing and controlling the video editing work, but such flexibility is quite limited in these platforms.

An online video editing system for media education was developed by the Kaneko laboratory at the University of Electro-Communications in 2004[85] [Figure 11]. This system is realized by controlling the streaming video's time code using SMIL. It is intended for educational purposes and has an online video editing function. Through this system, students can simulate the video editing and creation process.

Figure 11. A Media Education System using Controlling Video's Streaming Time Code

Another web-based desktop sharing system for video editing[86] was developed by

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[85] Yosuke Suzuki. Study of Media Education System Using the Time Code Control of Streaming Video (in Japanese, Streaming Douga No Time Code Wo Mochiita Meida Kyoiku System No Kenkyu). Master's Thesis. Department of Human Communications, Graduate School of Telecommunication, University of Electro-Communications. 2004.

[86] Hiroyuki Tanaka. Development of a Desktop-Sharing System for Video-Editing e-Learning (in Japanese, Douga Hensyu e-learning No Tamei No Desktop Kyoyuu System No Kaihatsu). Master's Thesis. Department of Human Communications, Graduate School of Telecommunications, University of Electro-Communications. 2010.

the Kaneko laboratory in 2010 [Figure 12]. Through this system, students can learn the video editing process with teachers through desktop sharing in a synchronous environment, or simulate the video editing process by themselves in an asynchronous environment.

Figure 12. A Web-based Desktop Sharing System for Video Editing

Both of these two systems provide a video editing function and are designed for education, but they are not incorporated into a media literacy educational program. Therefore, the basic concepts of media literacy are not explained in the system. Students can edit and create videos, but they do not learn the theoretical foundation underlying the process of constructing videos and other types of media information.

As explained in section 1.2, the present project integrates the video editing simulator into a web-based media literacy education program through the paired concepts of frame and montage. The following section probes more deeply these two concepts and their role in the program.

2.5 Frame and Montage

In a film, the projected image occupies a defined *space* on the screen, and it changes over *time* to create a story. Okada, a Japanese film critic, said that "film is a visual form of space and time, its expression and transmission characteristics are mainly

determined by processing of space and time, and its realistic impression, meaning, and signification come from movements of space and time."[87]

From the perspective of space, the contents on the screen are selected and composed within a frame. From the perspective of time, the selected shots are connected and displayed through the art of montage. Bordwell and Thompson explain:

> The image of a film projected on a screen displays a composition within a frame. The arrangement of contents inside of the frame creates the composition of the screen space. Further, the shots and our viewing of them take place in time. The filmmaker decides how long a film and a shot will last, and how shots are presented to create temporal continuity with the consideration of montage.[88]

Film is a visual form of space and time, with these two components being determined by frame and montage, respectively [Figure 13].
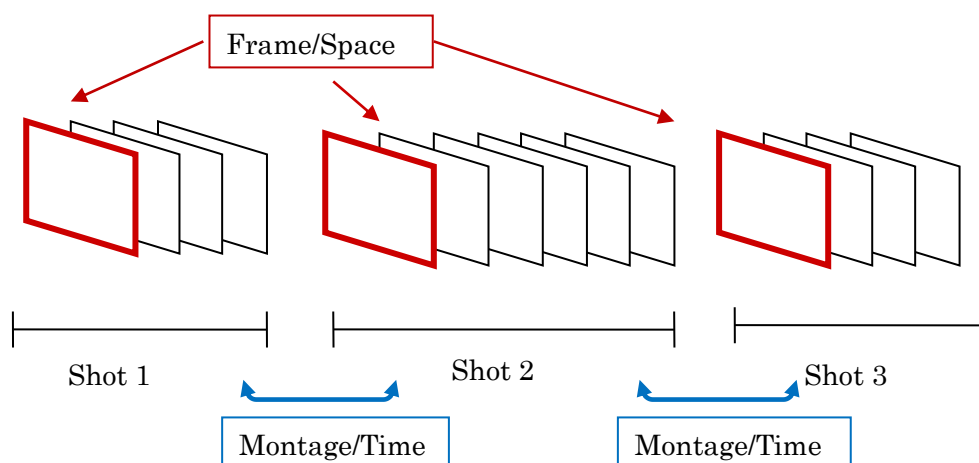
Figure 13. Frame in Space, Montage in Time in Film Making

The American film critic James Monaco says that three issues determine the filmmaking process: what should be shot, how it should be shot, and how the shots should be presented.[89] Frame, the composition of shots in spatial selection, involves

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[87] Susumu Okada. *Image Science: An Introduction—What You See in Photography, Film, and TV* (in Japanese, Eizougaku・Jyosetsu: Syashin・Eiga・Television・Gan Ni Mieru Mono). Press of Kyushu University. 1981. p139.

[88] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill, 2004. pp208 and 217.

[89] James Monaco. *How to Read a Film: The Art, Technology, Language, History, and Theory*

filmmakers' consideration of what should be shot and how it should be shot; montage, the editing of shots in temporal connection, means the consideration of how the shots should be presented. Therefore, frame and montage are the two most important principles in understanding the filmmaking process. I will discuss each of these in further detail.

2.5.1.　Frame

Frame is defined as "a rigid structure that surrounds something such as a picture."[90] Bordwell and Thompson explain that "the frame is not simply a border, it refers to cutting out image from the space; it imposes a certain vantage point onto the material within the image, and it defines the image for us."[91] That is, frame in filmmaking does not refer just to the physical border; it is also related to the selection and composition of the contents inside the physical border.

Bordwell and Thompson also indicate that the use of frame can powerfully affect a film's impact in terms of "the way the frame defines on-screen and off-screen space; the way frame imposes the distance, angle, and height of a vantage point onto the image; the way frame can move in relation to the compositions."[92]

First, frame makes the film image finite, bounded, and limited. We are living in an infinite and continuous world, but through the frame, filmmakers select some scenery to show us while leaving the rest of the space off screen. Broadly, all media information we access is selected from reality, framed, and then presented to us on screen. The audience has little opportunity to see or hear the contents outside the media frame. Furthermore, the filmmaker's choice of elements and movements in a frame has a crucial impact on the film's visual effects and the viewer's experience; the film creator can guide the audience's attention through a frame's compositional patterns.

Second,thea position from which the contents in a frame are viewed largely affects the quality and effect of a film. It is said that "the elements in the frame that affect how

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of Film and Media. Film Art Sha, Ltd. 1983. p151.

[90] http://oxforddictionaries.com/definition/english/frame?q=frame. Extracted on July 2, 2013.

[91] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill. 2004. p252.

[92] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill. 2004. p253.

the image is viewed include shot size, camera angles, composition, and so on."[93] The long shot usually intends to show some relation to the surroundings, the medium shot highlights the characters' actions, and the closeup is normally used to display people's emotions.[94] Three kinds of angles are generally used in photography: high angle, low angle, and eye level. A character in a high-angle shot generally looks small, weak, or powerless. A low-angle shot can make a character look stronger or threatening. An eye-level shot has little psychological effect on the viewers.[95] Through composition techniques, a balanced and visually pleasing image can be created, or some tension can be reinforced.[96]

Third, since the frame orients us to the contents in the image, our emotion and concentration will move along with the movement of the frame. Camera movements allow coherent shooting for better expression of emotion or a scene. "The movement in the frame produces changes of camera angles, levels, compositions, and distance during the shot. Pan, follow, tilt, zoom and tracking are general elements in camera movement."[97]

2.5.2. Montage

Montage is "the process or technique of selecting, editing, and piecing separate sections to form a continuous whole."[98] It entails the combination of separate shots to create new meaning in filmmaking.

Just as the overall meaning of an article is formed through the combination of words, the meaning and implication of a film are formed through the montage, or the temporal connection of shots, which goes far beyond the sum of each shot. Fabian Winkler says, "In filmmaking, by putting shot 'A' in juxtaposition to shot 'B,' the result is

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[93] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill. 2004. p259.
[94] Benjamin H. Detenber, Byron Reeves. A Bio-Informational Theory of Emotion: Motion and Image Size Effects on Viewers. *Journal of Communication.* Vol. 46, No. 3, 1996. pp66-68.
[95] Robert N. Kraft. The Influence of Camera Angle on Comprehension and Retention of Pictorial Events. *Journal of Memory and Cognition.* Vol. 15, No. 4, 1987. pp297-307.
[96] Bert P. Krages. *Photography: The Art of Composition.* Allworth Press. 2005. p30.
[97] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill. 2004. pp266-267.
[98] http://oxforddictionaries.com/definition/english/montage. Extracted on May 1, 2013.

not a sum of the two but a new idea which might be called 'C.' "[99] Eisenstein, a pioneering Soviet Russian film director and theorist, indicates that "montage could create meaning or have a great impact beyond the individual cuts."[100] Bordwell, an American film theorist and historian, emphasizes that a filmic meaning is built out of an assemblage of shots that creates a new synthesis, an overall meaning that lies not within each shot but in the fact of juxtaposition.[101]

Also, montage can use visual effects in fascinating and powerful ways, as illustrated by the most celebrated moments of some famous movies. Bordwell provides examples such as the Odessa Steps sequence in *Potemkin*, the shower murder in *Psycho*, the train crash in *La Roue*, the diving sequence in *Olympia*, and Clarice Starling's discovery of the killer's lair in *The Silence of the Lambs*.[102] Figure 14 presents an example of montage in *Olympia*.

Figure 14. An Example of Montage in the Film *Olympia*

More importantly, montage has a strong effect within an entire film's stylistic system. "An ordinary Hollywood film typically contains between 1,000 and 2,000 shots, and action-based movie can have 3,000 shots or more."[103] The montage of these shots can strongly shape viewers' understanding and contribute significantly to the film's organization and its influence on viewers. James Monaco indicates that montage is used to build a narrative, control rhythm, create metaphor, and make points in three different ways: "The first is the basic meaning of assembling separate shots. The second

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[99] Fabian Winkler. Continuity and Montage. *Journal of Video Art.* Spring, 2012. p3.
[100] S. M. Eisenstein. *Towards a Theory of Montage.* BFI Publishing. 1994.
[101] David Bordwell. *The Idea of Montage in Soviet Art and Film.* Cinema Journal, Vol. 11, No. 2, pp9-17.
[102] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill. 2004. p294.
[103] David Bordwell, Kristin Thompson. *Film Art: An Introduction.* McGraw-Hill. 2004. p294.

is to create the third meaning beyond the two shots' meanings through dialectical process. The third is to transmit a tremendous amount of information in a short time through assembling many short shots."[104]

Technically, a film editor eliminates unnecessary footage, cuts superfluous frames, and joins the desired shots through specific montage techniques like cutting, dissolve, fade-in, fade-out, special effect, dubbing, jump cut, and synthesis.

2.5.3. Frame and Montage Schema for Media Literacy Education

As explained above, frame and montage play decisive roles in the process of filmmaking. Scheufele and Bordwell state that frame and montage can also be applied to other media beyond film, such as videos, pictures, television programs, painting, and drama.[105] [106] Entman explains that, in all media, the use of frame functions "to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, and/or moral evaluation."[107] As for montage, Bordwell says explicitly that "the theory of montage, viewed most abstractly, can be applied outside film. The fundamental principles—assemblage of heterogeneous parts, juxtaposition of fragments, the demand for the audience to make conceptual connections—seem transferable to drama, music, literature, painting, and so on."[108]

The present study proposes a frame/montage schema to organize the structure of teaching materials that will explain how general media information is constructed. A more detailed explanation of this approach is provided in chapter 3.

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[104] James Monaco. *How to Read a Film.* Film Art Co.,Ltd. 1983. pp183.
[105] Dietram A. Scheufele. Framing as a Theory of Media Effects. *Journal of Communication.* Vol. 49, No. 1, 1999. pp103-122.
[106] David Bordwell. *The Idea of Montage in Soviet Art and Film.* Cinema Journal, Vol. 11, No. 2, pp9-17.
[107] R. M. Entman. Framing: Towards Clarification of a Fractured Paradigm. *Journal of Communication.* Vol. 43, 1993. pp51-58.
[108] David Bordwell. *The Idea of Montage in Soviet Art and Film.* Cinema Journal, Vol. 11, No. 2, pp9-17.

Chapter 3

DESIGN PRINCIPLES AND PROGRAM STRUCTURE

3.1 The Frame and Montage Schema for Overall Understanding of Media Literacy

This program proposes use of the frame and montage schema to teach students how all media messages are constructed. The frame and montage schema is a principle by which to interpret the construction process of visual media contents through the selection and connection of individual shots. This schema can be extended to explain the construction process of media information in general.

As described in section 2.5, frame is related to spatial selection and montage is related to temporal connection in the film production process, and the frame and montage schema governs the construction process of a film.

For example, the creation of video information, like the filmmaking process, can be understood through the concepts of frame and montage. Decisions as to what should be shot and how it should be shot lead to the action of taking a camera and shooting the subject from a certain angle, at a certain size, and with a certain background. This is the selection process, or frame. Afterwards, how the shots should be presented is considered as the shots are cut and connected together using montage techniques. Through these actions, a video is constructed with a particular meaning. Figure 15 shows how the frame/montage schema works in the video creation process.

Frame = Selection

Montage = Connection
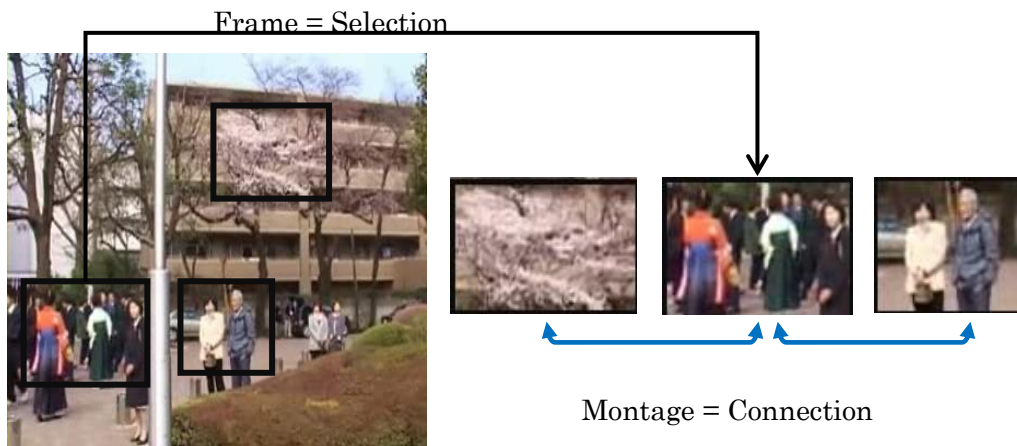
Figure 15. Frame and Montage in Video Creation

The principle of frame and montage can be also applied to textual information using similar concepts of selection and connection, parallel to the concepts of paradigm and syntagm in linguistics.[109] In linguistics, words of a certain sentence are selected from many possibilities, and then the selected words are connected to create a complete sentence. As shown in Figure 16, with a change between "red," "blue," and "rose" in the vertical axis of selection, or due to a change of order among "I," "like," "blue," and "flowers" in the horizontal axis of connection, the meaning of the sentence will be changed. On a broader scale, entire newspaper articles are constructed through this process as well.

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[109] The use of "syntagm" and "paradigm" in this way was first proposed by Ferdinand de Saussure to analyze language in his *Course in General Linguistics.* He described language in two dimensions: syntagmatic and paradigmatic. In the syntagmatic dimension, a sentence has some meaning because words are placed one after another; in paradigmatic dimension, each word used in a certain sentence is chosen from a vast set of alternative words. F. de Saussure, Course in General Linguistics (R. Harris, Trans./Annotator; C. Bally and A. Sechehaye, Eds., collaboration of A. Riedlinger). London: Duckworth. 1983. p135. (Original work published 1916)

Connection/Syntagm/Montage

| I | like | blue | flowers |

Selection/Paradigm/Frame

| red |

| rose |
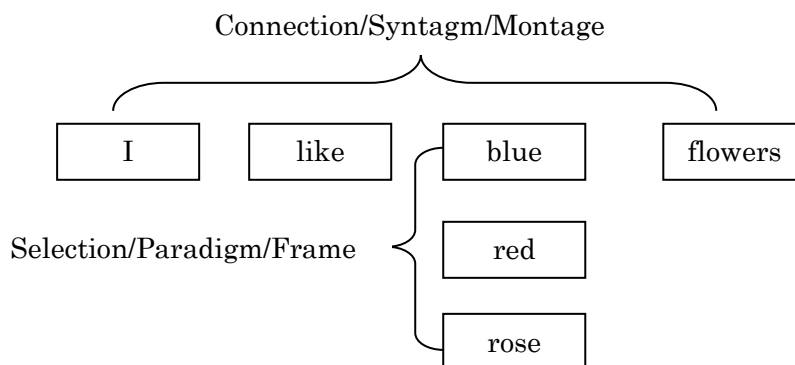
Figure 16. Paradigm and Syntagm

The frame/montage principle can also be reflected in all other types of media information, as the selection and connection processes are deeply rooted in their construction. All the basic elements of a media communication can be treated as fragments, and therefore any type of media information can be considered as a construction of these fragments in a certain order. Hence, the selection and connection process is adaptable to all media types. The creator of a particular piece of media information must consider, for example, what message is to be transferred through the information and the appropriate content and format for doing so. After one has determined the theme, the materials and contents must be selected from various places, including original performances, social phenomena, or other relevant sources, for the purpose of presenting the information. Then, they are composed in a proper order to produce the information. In other words, after one has decided the theme of a message, the first step in creating media information is to select; then the selected materials or fragments are connected in a certain order. Therefore, it can be said that all types of media information are created through the process of selection and connection: selection of information from the real world that is thought to be important, and connection of the selected informative fragments to create a meaningful story. As Figure 17 shows, reality is like an iceberg, in that most parts of it are neglected because they are not selected by media practitioners. Media producers take only those parts of reality that they consider important and connect them to produce media information.
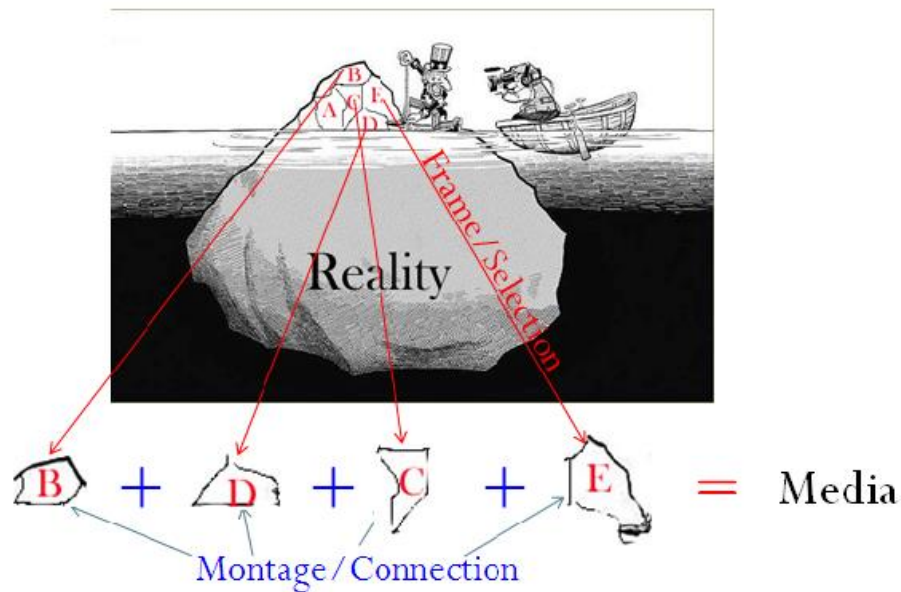
Figure 17. The Process of Constructing Media Information.

Thus, the frame and montage schema governs the construction of film, video, textual information, general media information, and all other types of media messages through the selection and connection process.

In the present program, we want to teach how to analyze the process of constructing all media information, as this is the basic and core understanding for media literacy, as explained in section 2.1.2. The frame and montage schema is proposed to explain how visual contents are constructed, but it can also be extended to explain how other types of media information or even general information are constructed. Through learning this program, students are expected not only to develop literacy with regard to visual media contents but also to gain an overall understanding of all media information types.

Teaching "overall understanding" of literacy implies that the teaching program covers all fields of media literacy knowledge. Primarily, it teaches literacy in the field of visual media through explanations and practice of frame and montage, by developing an online video editing simulator (VES) as a virtual platform for simulating the video editing and creation process. Through the VES, users can manage frame (selection of

shots) and montage (connection of shots). The VES is incorporated into the teaching program as a design premise. Second, the program teaches literacy for all media information, explaining that frame equals selection and that montage equals connection, and using these principles inherited from the realm of visual media creation as applicable to all information creation.

After explaining the frame and montage schema, we will introduce how the creative practice of media literacy can be realized through the Video Editing Simulator.

3.2 Emphasis on Creative Practice using the VES

As discussed in section 2.3.1, creative practice is indispensable in media literacy education. Only through creative practice can students deeply understand the analytical materials. However, incorporating creative practice with a web-based media literacy education program is still challenging, as discussed in section 2.3.2.

In the present educational program, the VES is used for creative practice. It has two main functionalities: selection and connection of original videos. For the same scene, the VES provides two or more original videos taken from different shot sizes and angles, which is based on frame. This gives students freedom to select original shots for the videos they want to create. After selecting original videos, students can use the connection function of the VES to manipulate those videos, thereby carrying out montage. For instance, they can delete some videos or change the order of the selected videos, as well as adjusting their starting and ending time. More detailed explanations about the VES will be provided in Chapter 4.

Through creative practice, students can experience on their own how a video's meaning can change with the change of selection (frame) and connection (montage). This can further enhance their understanding that media messages are based on the author's thoughts and realized by the author's decisions regarding frame and montage. Through practice in creating media messages with the VES, students can also accumulate knowledge of composition and editing techniques that can effectively convey their intended meanings.

3.3 Other Design Principles

The proposed media literacy education project also includes other design principles that will be described in this section.

3.3.1　Education Targets

Media literacy education is a kind of lifelong education. Christ and Potter emphasize that all people, regardless of their age or education level, can engage in media literacy education,[110] although the teaching materials and approaches should vary for different students.

This program originated in the Media Literacy course for third-year students in the Department of Human Communications at the University of Electro-Communications. Since one advantage of the web-based learning program is the ability to share teaching materials widely, this web-based media literacy education program could be used by virtually anyone who can understand the instructional material. Thus, the education targets of this program include students from senior high school to the university level, along with citizens who have comparable amounts of education.

The materials contained in this program are designed for delivery in four lessons, each one lasting 50 minutes for senior high school students and 45 minutes for university students.

3.3.2　Taking TV and Visual Media Contents as Specific Examples

The present program, as a prototype, focuses on television and visual media contents as specific teaching materials. These two forms of media occupy most of our media entertainment time. YouTube, Gyao, and Nico Nico Douga are three main online video sites in Japan, and the number of unique users of each of these platforms has increased from 22.48 million, 11.9 million, and 8.01 million, respectively,[111] to 1 billion,[112] 19 million,[113] and 8.53 million[114] between September 2009 and June 2014.

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[110] W. G. Christ, W. J. Potter. Media Literacy, Media Education, and the Academy. *Journal of Communication.* Vol. 48, 1998. pp5-15.

[111] http://www.itmedia.co.jp/news/articles/0910/27/news039.html. Extracted on February 15, 2015.

[112] http://expandedramblings.com/index.php/youtube-statistics/. Extracted on February

On the other hand, TV and visual media contents are generally more interesting to viewers than text-based and sound-based media messages are. It may be easier for students to understand first the process of constructing videos, then other types of media messages, and finally all media messages in general. Therefore, the four-lesson education program uses TV and visual media contents as specific teaching materials.

3.4 Program Structure

The program structure is based on media literacy pedagogy and design principles. The frame/montage schema is the most important framework in this program, so Lessons 2 and 3 present detailed explanations of frame and montage, respectively. Before learning these concepts, students need to have a basic understanding of media literacy, as well as TV and visual media contents, so Lesson 1 covers these topics. After studying these analytical materials (reading), students should engage in creative practice (writing) to gain deeper understanding of analytical materials, so Lesson 4 provides this creative practice. Each individual lesson moves from the simple to the more complex. As noted previously, each lesson contains five steps: suggested questions, basic explanation, advanced explanation, extension to media literacy, and exercises [Table 1].

Table 1. Program Structure

	Suggested questions	Basic explanation	Advanced explanation	Extension to ML	Exercise
Lesson 1 TV/ML	1s	1a	1b	1c	1e
Lesson 2 Frame	2s	2a	2b	2c	2e
Lesson 3 Montage	3s	3a	3b	3c	3e
Lesson 4 Practice	Creative Practice through the VES				
*ML: Media Literacy					

15, 2015.

[113] http://markezine.jp/article/detail/19913. Extracted on February 15, 2015.

[114] http://www.actzero.jp/social/report-9033.html. Extracted on February 15,2015.

To summarize, Lesson 1 provides a brief introduction to TV and media literacy. Lessons 2 and 3 explain frame and montage and their decisive role in constructing media messages, not only for visual media contents but also for all media information. Lesson 4 provides the VES, which is designed based on the principle of frame and montage and intended to enhance students' understanding of previous lessons.

As for the teaching steps, suggested questions (the first step, abbreviated as s) are provided based on the inquiry model. Then students learn the teaching materials from simple to complex: basic explanation, advanced explanation, and extension to overall media literacy (marked as a through c, respectively, in Table 1). As a form of interactive learning, students can compare their own answers to the suggested questions with the explanations given in the teaching materials. At the end of each lesson, exercises (the last step, abbreviated as e) are provided for reviewing and checking students' understanding of each lesson.

In Lessons 1 to 3, questions in the first and last steps are related to knowledge elements in the middle three steps. Therefore, the program structure contains nine knowledge elements, which are the middle three steps in Lessons 1, 2, and 3 (gray background in Table 1).

From the perspective of knowledge and skill, Lesson 1 mainly provides basic knowledge about media literacy and TV programs. In Lessons 2 and 3, step a (basic explanation) mainly covers the core knowledge concepts of frame and montage; steps b (advanced explanation) and c (extension to overall media literacy) explain the skills of how to use frame and montage to understand and create videos and other types of media information. Lesson 4 provides a platform for students to create videos using their understanding of frame and montage.

Concrete details of this program will be provided in chapter 5.

Chapter 4

THE VIDEO EDITING SIMULATOR

4.1 Introduction

The Video Editing Simulator (VES) is an online virtual platform for simulating the video editing and creation process. It consists of video editing functions including video streaming, video cutting and editing through timeline control, choosing original FLV videos, video saving, and other functions such as chatting with others and listing students' login information.

Through the VES, students can select original videos and change their starting and ending time, as well as their sequence. When students edit a video, the order number, name, and new starting and ending times of the video are recognized and recorded by ActionScript. As Figure 18 shows, after one has edited the selected videos, a video set will be created by connecting selected videos in the timeline. The created video set can then be streamed by clicking the play button. When students click the save button, the information on the created video set, including the name, sequence number, and new starting and ending time of each selected video, will be stored in a database. When students want to replay the created video set, they can select the video from the edited videos list. ActionScript will read the stored data and will play the video through the "play box" located in the middle of the VES.
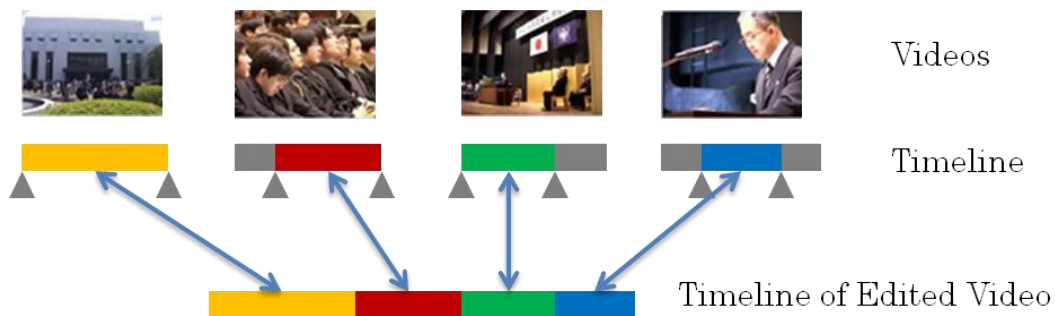
Figure 18. Video Editing and Streaming Control Process

The VES also enables students to communicate with each other by sending and

receiving messages.

4.2   Architecture and Interface

4.2.1   Architecture

As Figure 19 shows, the VES is developed as one SWF file using Adobe Flash; the SWF file is placed in a web server and can be accessed through a web browser. A Flash Media Server (FMS) is used for video streaming.

The original videos provided in the VES are in the form of FLV and are located in the Flash Media Server. Other necessary files and information for the VES are also stored in the Flash Media Server, such as JPEG files, which are used as thumbnails of original videos, and a XML file that records the path, title, and total time of each FLV video. The information on created video sets is stored in two CSV files in the Flash Media Server [Figure 19].
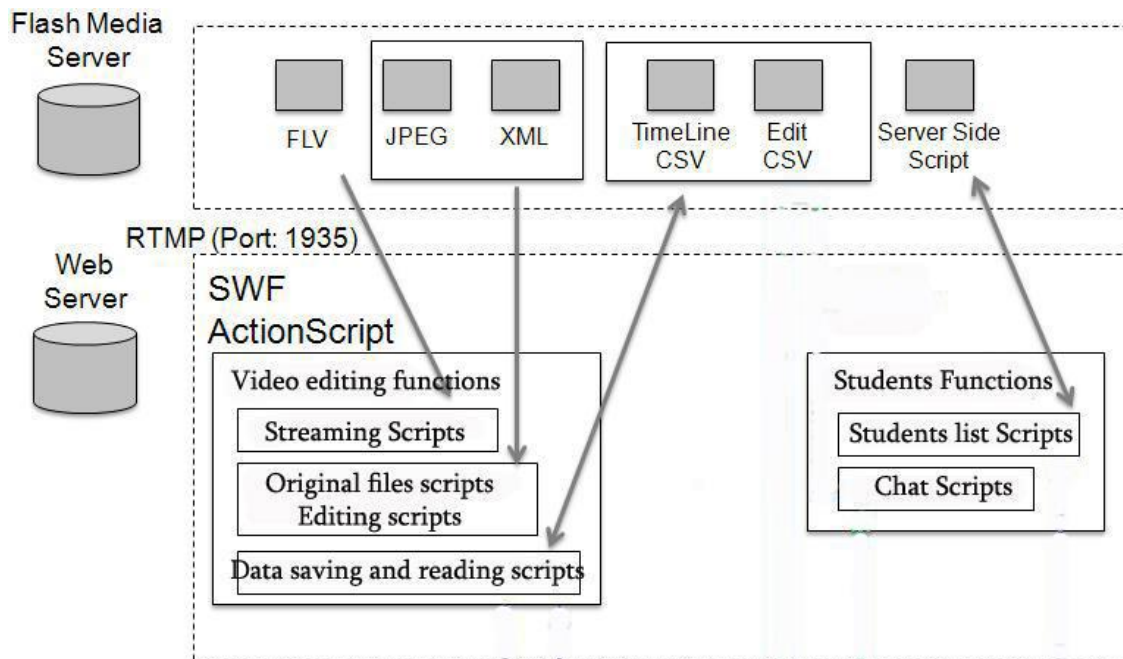
Figure 19. The VES Architecture

All the files in the Flash Media Server and web server are connected together to realize the video editing function and other functions through the control of Flash

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ActionScript. Details of this process will be introduced in sections 4.3 and 4.4.

4.2.2　Interface

In accordance with the architecture, the VES's interface is designed as shown in Figure 20. The green circled numbers in Figure 20 represent the following items:

Figure 20. The VES Interface

1. Original videos - The original FLV videos are displayed.
2. Time line - Original FLV videos can be inserted, and the sequence of the videos can be reorganized.
3. Beginning of cutting axis - Specifies the beginning time of selected videos.
4. Ending of cutting axis - Specifies the ending time of selected videos.
5. Stop - Stop playing videos.
6. Play - Start to play videos.
7. Save - Save created videos into the database.

8. Logout – Log out from the VES

9. Editing database - Read data on created videos from the database

10. Learners - List the students who are logged in to the VES.

11. Chat - Show messages sent by students logged in to the VES.

12. Message sending - Send messages to other students.

4.3   Video Editing Functions

As mentioned in section 4.1, the VES consists of video editing functions and other functions. Video editing functions involve choosing original FLV videos, cutting and reordering videos through timeline control, playing videos, and saving created video sets [Figure 21]. Detailed explanations of how to implement these functions are provided below.
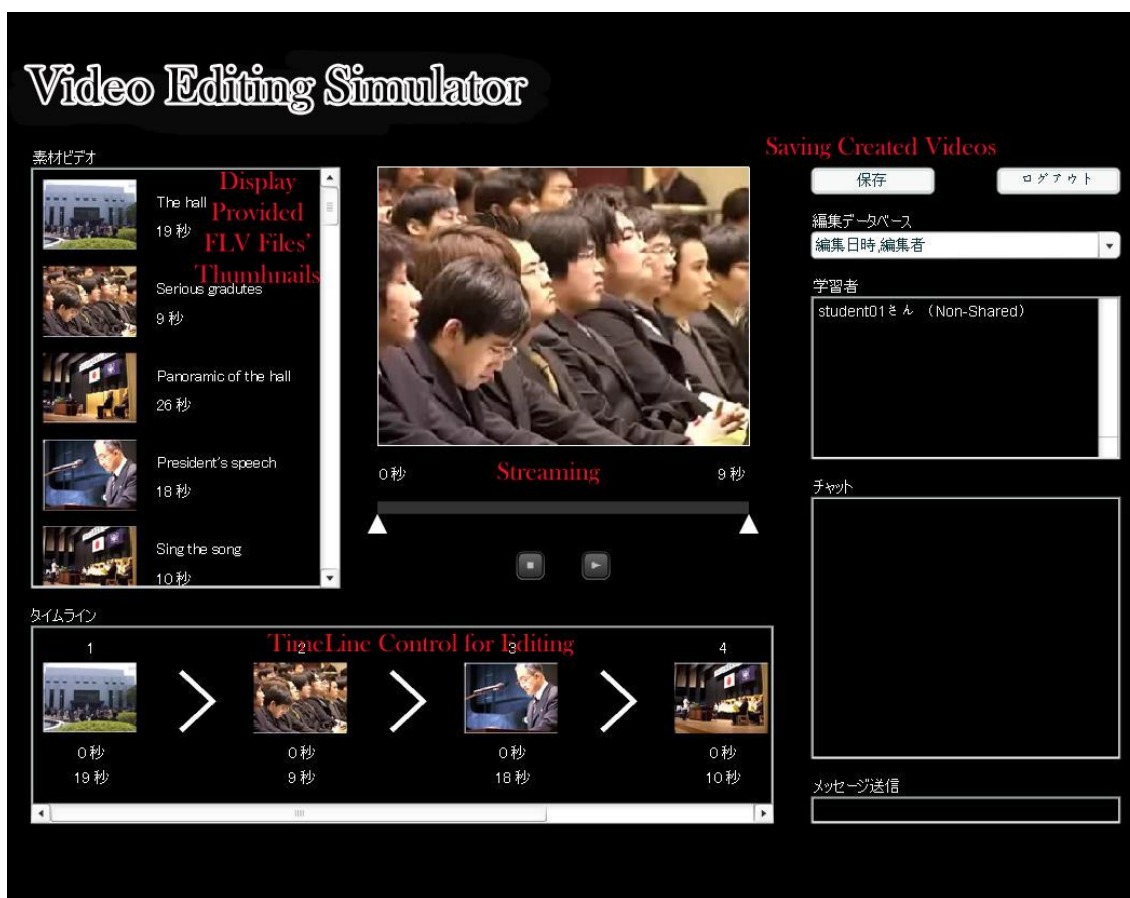
Figure 21. Video Editing Functions in the VES

4.3.1.   Choosing Original FLV Videos

The first step in the VES is to choose original FLV videos. Before one chooses videos, the original FLV videos are displayed using their thumbnails to give students some initial impression of them.

When the VES is accessed, original FLV videos' thumbnails are displayed on the left

side of the VES, with their titles and time [Figure 21]. This process is realized through the ActionScript calling for a XML file, where FLV videos' thumbnail information, titles, and time are saved. Variables included in the XML are ImageName, FLVName, Title, and Total Time, as shown in Table 2. Necessary variables for the ActionScript are StockNum, ImageName, FLVName, Title, and Total Time, detailed explanations of which appear in Table 3.

Table 2. Data of XML

Variable	Content
ImageName	Folder path for external files
FLVName	Name of original FLV videos
Title	Title of original FLV videos
Total Time	Duration of original FLV videos

Table 3. Necessary Data for ActionScript

Variable	Content
StockNum	Number of original FLV videos
ImageName	Folder path for external files
FLVName	Name of original FLV videos
Title	Title of original FLV videos
Total Time	Duration of original FLV videos

An example of the XML file's (Stock.xml) contents are as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<video>
<Data ImageName="Thumbnail Pass" FLVName="Original Video Pass" Title="Title"
TotalTime="Time"/>
<!-- chapter3.4 editing simulation-->
<Data ImageName="./Image/1.jpg" FLVName="1" Title="The hall" TotalTime="19"/>
<Data ImageName="./Image/2.jpg" FLVName="2" Title="Serious graduates"
TotalTime="9"/>
<Data ImageName="./Image/3.jpg" FLVName=" 3" Title="Panoramic of the hall"
TotalTime="26"/>
…………………………………………
</video>
```

With this understanding of the XML and variables for the ActionScript, the processing procedure for displaying original FLV videos' information will be presented. First, the ActionScript connects with the XML file and reads the thumbnails, title, and time provided in the XML file. Then, the ActionScript displays all above information and set the scroll bar. Specific scripts for this process are as follows:

- Read external XML file

```
StockXMLData = new XML();

StockXMLData.load("Stock.xml");
```

- Based on XML file, read external thumbnail image and set the scroll bar:

```
//read external thumbnail image
StockXMLData.onLoad = function() {
 StockNode = StockXMLData.firstChild.childNodes;
 StockNum = StockNode.length;

 for (i=1; i<StockNum; i++) {
    StockName = "Stock"+i;
    StockMenu_SP.content.attachMovie("StockThum_MC",StockName,i);

StockMenu_SP.content[StockName].StockThum_MC.loadMovie(StockNode[i].attributes["Im
ageName"]);
 StockMenu_SP.content[StockName].Title_TF.text=StockNode[i].attributes["Title"];

StockMenu_SP.content[StockName].TotalTime_TF.text=StockNode[i].attributes["TotalTim
e"]+" 秒";
 StockMenu_SP.content[StockName].FLVName=StockNode[i].attributes["FLVName"];
 StockMenu_SP.content[StockName].TotalTime=StockNode[i].attributes["TotalTime"];
 StockMenu_SP.content[StockName].ImageName=StockNode[i].attributes["ImageName"];
 StockMenu_SP.content[StockName]._y = (i-1)*70;
 }
            StockMenu_SB.setScrollProperties(StockMenu_SP.height,0,(StockNum-1)*70-
StockMenu_SP.height);
};
//set the scroll bar
StockMenu_SB.addEventListener("scroll",StockMenuSB);
StockMenuSB.scroll = function(Evt) {
 for (i=1; i<StockNum; i++) {
 StockName = "Stock"+i;
 StockMenu_SP.content[StockName]._y=(i-1)*70-Evt.target.scrollPosition;
 }
};
```

After logging in to the VES, students can choose several original videos and drag them into the timeline. The processing procedure of this function is realized through two steps. Firstly, the VES creates a new timeline and sets the scroll bar according to the length of the timeline. Second, original FLV videos are chosen and dragged into the timeline. The detailed coding is as follows:

- Create a new TimeLine, set the scroll bar

```
//create a new TimeLine
function TimeLineBuildFunc() {
    TimeLineNum++;

    TimeLineThumName = "TimeLineThum"+TimeLineNum;

TimeLine_SP.content.attachMovie("TimeLineThum_MC",TimeLineThumName,TimeLine
Num);

 for (i=1; i<=TimeLineNum; i++) {
    TimeLineThumName = "TimeLineThum"+i;
    TimeLine_SP.content[TimeLineThumName]._x = (i-1)*170;
}
TimeLine_SB.setScrollProperties(0,0,0);
TimeLine_SB.setScrollProperties(TimeLine_SP.width,0,TimeLineNum*170-
TimeLine_SP.width);
}
//set the scroll bar for TimeLine
TimeLine_SB.addEventListener("scroll",TimeLineSB);
TimeLineSB.scroll = function(Evt) {
    for (i=1; i<=TimeLineNum; i++) {
        TimeLineThumName = "TimeLineThum"+i;
        TimeLine_SP.content[TimeLineThumName]._x=(i-1)*170-Evt.target.scrollPosition;
}
};
```

- Choose the original videos, and drag them into the timeline:

```
function DragThumBuildFunc(TEMPXMouse, TEMPYMouse, TEMPEditNum,
TEMPFLVName, TEMPTotalTime, TEMPImageName) {
 if (TEMPEditNum == null) {
  FLVName["TEMP"] = TEMPFLVName;
  StartTime["TEMP"] = 0;
  EndTime["TEMP"] = TEMPTotalTime;
  TotalTime["TEMP"] = TEMPTotalTime;
  ImageName["TEMP"] = TEMPImageName;
  StreamMode = false;
  NS.play(FLVName["TEMP"],0,0);
 }

 if (TEMPEditNum != null) {
  FLVName["TEMP"] = FLVName[TEMPEditNum];
  StartTime["TEMP"] = StartTime[TEMPEditNum];
  EndTime["TEMP"] = EndTime[TEMPEditNum];
  TotalTime["TEMP"] = TotalTime[TEMPEditNum];
  ImageName["TEMP"] = ImageName[TEMPEditNum];
 }
 StartTime_TF.text = StartTime["TEMP"]+" 秒";
 EndTime_TF.text = EndTime["TEMP"]+" 秒";
 StartTimeBar_MC._x =
TimeBarBack_MC._x+(StartTime["TEMP"]/TotalTime["TEMP"])*TimeBarBack_MC._widt
h;
 EndTimeBar_MC._x =
TimeBarBack_MC._x+(EndTime["TEMP"]/TotalTime["TEMP"])*TimeBarBack_MC._width;
 TimeBar_MC._x = StartTimeBar_MC._x;
 TimeBar_MC._width = EndTimeBar_MC._x-StartTimeBar_MC._x;

 attachMovie("DragThum_MC","DragThum_MC",0);
 DragThum_MC.DragThum_MC.loadMovie(ImageName["TEMP"]);
 DragThum_MC._x = TEMPXMouse;
 DragThum_MC._y = TEMPYMouse;
}
```

4.3.2. Editing Videos through Timeline Control

The second function is video cutting and reordering through timeline control. Students can change the starting and ending time of each selected video, change their order in the timeline, or delete a selected video. Through this process, a new video set will be created, and it can be played by using the play button.

Processing in the timeline includes a "New" setting to start the timeline control, "Insert" to insert a new original video, "Move to the left" to insert a certain video before the left one, and "Move to the right" to insert a certain video after the right one. Detailed information about these settings is shown in Table 4.

Necessary variables required in the ActionScripts for timeline control involve I, FLVName, ImageName, StartTime, EndTime, and TotalTime. Refer to Table 5 for more detailed contents of these variables.

Table 4. Processing of Timeline

Processing	Statement	Starting Point	Ending Point
New	EditNum == null && TimeLineNum_TF.text == "Next"	Original videos	Empty TimeLine
Insert	EditNum == null && TimeLineNum_TF.text != "Next"	Original videos	Current TimeLine
Move to the left	EditNum<TimeLineNum_TF.text)	Current TimeLine	The left TimeLine
Move to the right	TimeLineNum_TF.text<EditNum	Current TimeLine	The right TimeLine

Table 5. Necessary Variables for Timeline Script

Variable	Content
I	Number of original FLV videos
FLVName	Name of original FLV videos
ImageName	Path and name of videos' thumbnails
StartTime	Starting time of selected video
EndTime	Ending time of selected video
TotalTime	Total time of selected video

The processing procedure for editing video through timeline control is realized

through three steps. First, change the starting and ending time of a certain video through two substeps: click a certain video in the timeline and then change its starting and ending time. Second, change the order of videos in the timeline and save the changed information. Finally, delete any video in the timeline if it is not needed. All editing data will be saved into a CSV file by clicking the save button. The details are as follows.

・ Change the starting and ending time of selected videos:

```
//change the starting time
function StartTimeSetFunc() {
    TimeBar_MC._x = StartTimeBar_MC._x;
    TimeBar_MC._width = EndTimeBar_MC._x-StartTimeBar_MC._x;
                            StartTime[EditNum]=Math.round((StartTimeBar_MC._x-
TimeBarBack_MC._x)/TimeBarBack_MC._width*TotalTime[EditNum]*100)/100;
    StreamMode = false;
    NS.play(FLVName[EditNum],StartTime[EditNum],0);
    StartTime_TF.text = StartTime[EditNum]+" 秒";
    TimeLineTargetPass = eval(TimeLinePass+EditNum);
    TimeLineTargetPass.StartTime_TF.text = StartTime[EditNum]+" 秒";
}


//change the ending time
function EndTimeSetFunc() {
    TimeBar_MC._x = StartTimeBar_MC._x;
    TimeBar_MC._width = EndTimeBar_MC._x-StartTimeBar_MC._x;
                            EndTime[EditNum]=Math.round((EndTimeBar_MC._x-
TimeBarBack_MC._x)/TimeBarBack_MC._width*TotalTime[EditNum]*100)/100;
    StreamMode = false;
    NS.play(FLVName[EditNum],EndTime[EditNum],0);
    EndTime_TF.text = EndTime[EditNum]+" 秒";
    TimeLineTargetPass = eval(TimeLinePass+EditNum);
    TimeLineTargetPass.EndTime_TF.text = EndTime[EditNum]+" 秒";
}
```

- Change the order of videos, then save the data:

```
//TimeLine setting
function TimeLineSetFunc(TEMPTimeLineNumA, TEMPTimeLineNumB) {
 TimeLineTargetPass = eval(TimeLinePass+TEMPTimeLineNumA);
 FLVName[TEMPTimeLineNumA] = FLVName[TEMPTimeLineNumB];
 StartTime[TEMPTimeLineNumA] = StartTime[TEMPTimeLineNumB];
 EndTime[TEMPTimeLineNumA] = EndTime[TEMPTimeLineNumB];
 TotalTime[TEMPTimeLineNumA] = TotalTime[TEMPTimeLineNumB];
 ImageName[TEMPTimeLineNumA] = ImageName[TEMPTimeLineNumB];

TimeLineTargetPass.TimeLineThum_MC.loadMovie(ImageName[TEMPTimeLineNumA]);
 TimeLineTargetPass.StartTime_TF.text= StartTime[TEMPTimeLineNumA]+" 秒";
 TimeLineTargetPass.EndTime_TF.text = EndTime[TEMPTimeLineNumA]+" 秒";
}
//New configuration
function TimeLineNewFunc() {
TimeLineSetFunc(TimeLineNum,"TEMP");
TimeLineTargetPass.TimeLineNum_TF.text = TimeLineNum;
}
//Insert configuration
function TimeLineInsertFunc(TEMPTimeLineNum) {
  for (i=TimeLineNum; TEMPTimeLineNum<i; i--) {
  j = i-1;
  TimeLineSetFunc(i,j);
}
TimeLineSetFunc(TEMPTimeLineNum,"TEMP");
TimeLineTargetPass = eval(TimeLinePass+TimeLineNum);
TimeLineTargetPass.TimeLineNum_TF.text = TimeLineNum;
}
//left exchange configuration
function TimeLineLeftShiftFunc(TEMPTimeLineNum) {
  for (i=EditNum; TEMPTimeLineNum<i; i--) {
    j = i-1;
    TimeLineSetFunc(i,j);
}
TimeLineSetFunc(TEMPTimeLineNum,"TEMP");
}
//right exchange configuration
function TimeLineRightShiftFunc(TEMPTimeLineNum) {
  for (i=EditNum; i<TEMPTimeLineNum; i++) {
   j = i+1;
   TimeLineSetFunc(i,j);
}
TimeLineSetFunc(TEMPTimeLineNum,"TEMP");
}
```

・   Delete an original video from the timeline:

```
function TimeLineDeleteFunc() {
  for (i=EditNum; i<=TimeLineNum-2; i++) {
    j = i+1;
    TimeLineSetFunc(i,j);
}
  for (i=TimeLineNum; TimeLineNum<=i; i--) {
    TimeLineTargetPass = eval(TimeLinePass+i);
    TimeLineTargetPass.removeMovieClip();
}
  EditNum = null;
  FLVName[TimeLineNum-1] = null;
  StartTime[TimeLineNum-1] = null;
  EndTime[TimeLineNum-1] = null;
  TotalTime[TimeLineNum-1] = null;
  ImageName[TimeLineNum-1] = null;
  TimeLineNum = TimeLineNum-2;
  TimeLineBuildFunc();
}
TimeLineDeleteKey.onKeyDown = function() {
  if (Key.getCode() == Key.DELETEKEY) {
    if (EditNum != null) {
        TimeLineDeleteFunc();
 }
 }
};
Key.addListener(TimeLineDeleteKey);
```

4.3.3.   Playing Videos

The created video set can be streamed in accordance with its settings. Necessary variables for streaming include StreamNum, FLVName, StartTime, and EndTime [Table 6].

<div align="center">Table 6. Variables for Streaming</div>

Variable	Content
StreamNum	Streaming number of videos in Timeline
FLVName	Name of FLV videos
StartTime	Starting time of FLV videos
EndTime	Ending time of FLV videos

Once the play button is clicked, ActionScript will read the edited video's information from the CSV file. The first video from the left side will be streamed first, and then others will be streamed one by one.

・ Play the first video:

```
NS.play(1,FLVName,StartTime,EndTime);
```

・ Detect the ending of the current streaming video, increase the streaming number by one, and play the following videos:

```
Function    StreamStartFunc(TEMPStreamNum,    TEMPFLVName,    TEMPStartTime,
TEMPEndTime) {
  EditNum = null;
  StartTime_TF.text = "StartTime";
  EndTime_TF.text = "EndTime";
  StartTimeBar_MC._x = TimeBarBack_MC._x;
  EndTimeBar_MC._x = TimeBarBack_MC._x+TimeBarBack_MC._width;
  TimeBar_MC._x = StartTimeBar_MC._x;
  TimeBar_MC._width = EndTimeBar_MC._x-StartTimeBar_MC._x;
  StreamMode = true;
  NS.play(TEMPFLVName[1],TEMPStartTime[1],TEMPEndTime[1]-TEMPStartTime[1]);
NS.onStatus = function(InfoObj) {
  if (StreamMode == true) {
    if (InfoObj.code == "NetStream.Play.Stop") {
      TEMPStreamNum++;

NS.play(TEMPFLVName[TEMPStreamNum],TEMPStartTime[TEMPStreamNum],TEMPEndTi
me[TEMPStreamNum]-TEMPStartTime[TEMPStreamNum]);
  }
  }
};
}
```

4.3.4.   Saving the Created Video Set

All editing information for each video in the timeline is recorded by ActionScript and saved in a CSV file named TimeLine_DB.csv. In addition, the user name and saving time will be recorded in another CSV file named Edit_DB.csv. Necessary variables for the TimeLine_DB.csv are CurrentDate, Username, I, FLVName, ImageName, StartTime, and EndTime [Table 7]. Necessary variables for the Edit_DB.csv include CurentDate and UserName [Table 8].

Table 7. Variables in 「TimeLine_DB.csv」

Variable	Content
CurrentDate	Editing date(year/month/date H:M:S)
UserName	User name
I	Number of videos in the TimeLine
FLVName	Name of videos in the TimeLine
ImageName	Path and name of videos' thumbnails
StartTime	Starting time of videos in the TimeLine
EndTime	Ending time of videos in the TimeLine
TotalTime	Total time of videos in the TimeLine

Table 8. Variables in 「Edit_DB.csv」

Variable	Content
CurrentDate	Editing date(year/month/date H:M:S)
UserName	User name

The processing procedure for saving videos includes reading the editing information on each video in the timeline, and saving the videos into Edit_DB.csv and TimeLine_DB.csv. The detailed ActionScripts are as follows.

· Read editing information:

```
function DateFunc() {
    DateObj = new Date();
    DateStr = Add0Func(DateObj.getFullYear())+"/";
    DateStr += Add0Func(DateObj.getMonth()+1)+"/";
    DateStr += Add0Func(DateObj.getDate())+" ";
    DateStr += Add0Func(DateObj.getHours())+":";
    DateStr += Add0Func(DateObj.getMinutes())+":";
    DateStr += Add0Func(DateObj.getSeconds());
    return DateStr;
}
```

· Save the creation data:

```
// save data into Edit_DB.csv
NC.call("Edit_DBFunc",null,CurrentDate,UserName);


Edit_DBData.onData = function(TEMPEdit_DB) {
    Edit_DB_CB.removeAll();
    TEMPEdit_DB = TEMPEdit_DB.split(String.fromCharCode(10));
    for (i=0; i<TEMPEdit_DB.length-1; i++) {
        Edit_DB_CB.addItem(TEMPEdit_DB[i]);
}
        Edit_DB_CB.sortItemsBy("label","ASC");
};
Edit_DB_CB.addEventListener("change",Edit_DBList);
Edit_DBList.change = function(Evt) {
    DateCondition = DateCondition=Evt.target.selectedItem.label.substr(0, 19);
     TimeLine_DBData.load("TimeLine_DB.csv");
};
```

```
// save data into TimeLine_DB.csv
NC.call("TimeLine_DBFunc",null,CurrentDate,UserName,i,FLVName[i],ImageName[i],StartTim
e[i],EndTime[i],TotalTime[i]);


TimeLine_DBData.onData = function(TEMPTimeLine_DB) {
    TEMPTimeLine_DB = TEMPTimeLine_DB.split(String.fromCharCode(10));
    TimeLine_DB = new Array();
    FLVName = new Array();
    ImageName = new Array();
    StartTime = new Array();
    EndTime = new Array();
    TotalTime = new Array();
    FLVName.push(null);
    ImageName.push(null);
    StartTime.push(null);
    EndTime.push(null);
    TotalTime.push(null);
    for (i=0; i<TEMPTimeLine_DB.length-1; i++) {
        TimeLine_DB[i] = TEMPTimeLine_DB[i].split(",");
        if (TimeLine_DB[i][0] == DateCondition) {
            FLVName.push(TimeLine_DB[i][3]);
            ImageName.push(TimeLine_DB[i][4]);
            StartTime.push(TimeLine_DB[i][5]);
            EndTime.push(TimeLine_DB[i][6]);
            TotalTime.push(TimeLine_DB[i][7]);
    }
}
    for (i=1; i<=TimeLineNum; i++) {
        TimeLineTargetPass = eval(TimeLinePass+i);
        TimeLineTargetPass.removeMovieClip();
}
    for (i=1; i<=FLVName.length-1; i++) {
        TimeLineThumName = "TimeLineThum"+i;
        TimeLine_SP.content.attachMovie("TimeLineThum_MC",TimeLineThumName,i);
        TimeLineTargetPass = eval(TimeLinePass+i);
        TimeLineTargetPass.TimeLineNum_TF.text = i;
        TimeLineTargetPass.TimeLineThum_MC.loadMovie(ImageName[i]);
        TimeLineTargetPass.StartTime_TF.text = StartTime[i]+" 秒";
        TimeLineTargetPass.EndTime_TF.text = EndTime[i]+" 秒";
        TimeLine_SP.content[TimeLineThumName]._x = (i-1)*170;
}
TimeLineNum = FLVName.length-1;
TimeLineBuildFunc();
StreamStartFunc(1,FLVName,StartTime,EndTime);
};
```

Information about the created video set saved in the files of Edit_DB.csv and TimeLine_DB.csv is partly shown as follows:

Edit_DB.csv

```
Date of Editing, Editor

2011/05/11 21:43:17,student01
2011/05/23 11:28:53,student02
2011/05/30 05:46:03,student77
```

TimeLine_DB.csv

```
Date of Editing,Editor,Play Number, Name of Video ,Thumbnail Pass,Starting
Time,Ending Time ,Streaming Time (Ending Time - Starting Time)

2011/05/11 21:43:17,student01,1, 1,./Image/1.jpg,4.03,14.69,19
2011/05/11 21:43:17,student01,2, 4,./Image/4.jpg,4.45,14.91,18
2011/05/11 21:43:17,student01,3, 5,./Image/5.jpg,0,10,10
2011/05/23 11:28:53,student02,1, 5,./Image/5.jpg,0,10,10
2011/05/23 11:28:53,student02,2, 4,./Image/4.jpg,0,18,18
2011/05/30 05:46:03,student77,1, a1,./Image/a1.jpg,0,9.11,31
2011/05/30 05:46:03,student77,2, b2,./Image/b2.jpg,0,10.24,22
2011/05/30 05:46:03,student77,3, a8,./Image/a8.jpg,0,6.7,13
2011/05/30 05:46:03,student77,4, a14,./Image/a14.jpg,3.42,17,17
2011/05/30 05:46:03,student77,5, a15,./Image/a15.jpg,0,9.12,10
2011/05/30 05:46:03,student77,6, a19,./Image/a19.jpg,0,11.03,12
2011/05/30 05:46:03,student77,7, a22,./Image/a22.jpg,7.4,18.63,24
2011/05/30 05:46:03,student77,8, b16,./Image/b16.jpg,0,28.97,46
2011/05/30 05:46:03,student77,9, b17,./Image/b17.jpg,0,5.33,10
2011/05/30 05:46:03,student77,10, a23,./Image/a23.jpg,0,15,15
```

4.4 Other Functions

Along with video editing functions, other functions for better communication are also provided, including a list of students and chatting with other students logged in to the VES [Figure 22].
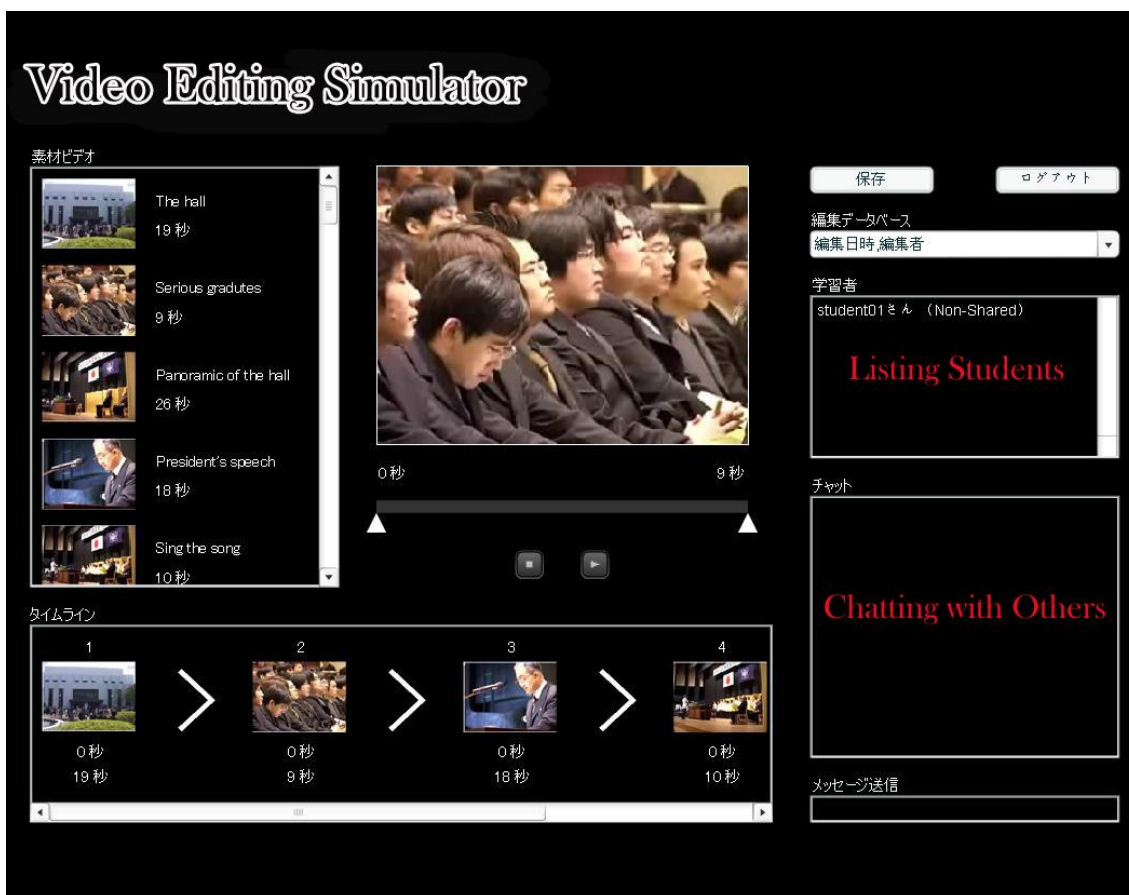
Figure 22. Student Management Functions in the VES

4.4.1. Listing Students Function

The "listing students" function identifies students who are logged in to the VES, to help students to engage in discussion and communication using the chatting function. The necessary variable for this function is UserName [Table 9].

Table 9. Variables for Listing Students

Variable	Content
UserName	User name

As for the processing procedure, first use the ActionScripts to check the logged-in students, then check the logged-out students, and finally list students in the VES.

- Check the logged-in students:

```
application.onConnect = function(Client, UserName) {
    this.acceptConnection(Client);
    UserNum++;
    Client.Num = UserNum;
    Sync.setProperty(Client.Num,UserName);
};
```

- Check the logged-out students:

```
application.onDisconnect = function(Client) {
    Sync.setProperty(Client.Num,null);
};
```

- Renew the list of students:

```
Sync.onSync = function() {
    Student_L.removeAll();
    for (i in this.data) {
        Student_L.addItem(Sync.data[i]);
    }
};
```

4.4.2. Chatting Function

The chatting function is offered for providing a communication environment that deepens students' learning through discussions with each other. Necessary variables for chatting scripts are Username and Text, as shown in Table 10.

Table 10. Variables for the Chatting Script

Variable	Content
UserName	User name
Text	Contents of chatting

ActionScripts for realizing the chatting function include sending messages and displaying messages.

· Sending chatting messages:

```
Sync.send("ChatFunc",UserName,this.text);
```

· Displaying chatting messages:

```
Sync.ChatFunc = function(TEMPUserName, TEMPMessage) {
    Chat_TA.text += TEMPUserName+"\n"+TEMPMessage+"\n"+"\n";
};
```

Chapter 5

THE WEB-BASED MEDIA LITERACY EDUCATION PROGRAM

5.1 General Description

In this chapter I will describe in further detail the content of the web-based media literacy education program including the VES. The program contains four lessons, as described in section 3.4. Lesson 1 introduces a basic understanding of TV programs, the TV industry, and media literacy. Lesson two explains frame: its physical meaning, its metaphorical meaning, and how frame affects the process of creating media messages. Lesson three interprets montage and how it works in the creation of videos and other types of media messages. Lesson four provides creative practice using the VES, where students can simulate the process of editing and creating videos using their understanding of frame and montage. Detailed contents of each lesson will be presented in sections 5.3, 5.4, and 5.5.

The teaching steps of each lesson proceed from simple to more complex. Consistent with the use of an inquiry model and interactive learning, suggested questions are provided as the first step, encouraging students to do their own reflection on media issues. The second step, basic explanation, covers simple issues on the lesson topic. It is followed by advance explanation, which leads students to think about media issues in greater depth. The fourth step, extension to overall media literacy, explains how the frame/montage schema affects the process of creating other types of media messages and general media information. Finally, exercises are provided to encourage deeper study and examine how much the student has understood from each lesson.

In this chapter, we will present this program from the following viewpoints: technical architecture, organization of lessons, organization of teaching steps, and details of the teaching materials.

5.2 Technical Architecture

5.2.1   The Architecture

The technical architecture of this program is designed as shown in Figure 23. First,

the index of the program is displayed through an HTML file (lessonmenu.html), and all lessons can be accessed through their links with the index. As Figure 23 shows, suggested questions of each lesson are displayed through one PHP file (lesson1.php), and students' answers are submitted to the database through another PHP file (answer1.php). When students progress to later steps, their answers are read and displayed along with explanations contained in the teaching materials through a PHP file (lesson2.php). The final teaching step provides exercises through a PHP file (lesson3.php). One more PHP file (answer3.php) is used for submitting students' exercise answers to the database. Videos used in teaching materials are linked with lesson PHP files (lesson1.php, lesson2.php, or lesson3.php), and displayed through another PHP file (movie.php). Teaching materials in the database are accessed through PHP files, and all PHP files are linked with the index HTML file. Refer to Appendix 1 for details on these PHP files.

As for the VES, the SWF file is located in a web server, and other data are stored in the Flash Media Server. The VES is displayed through its link with this program's index file (lessonmenu.html).
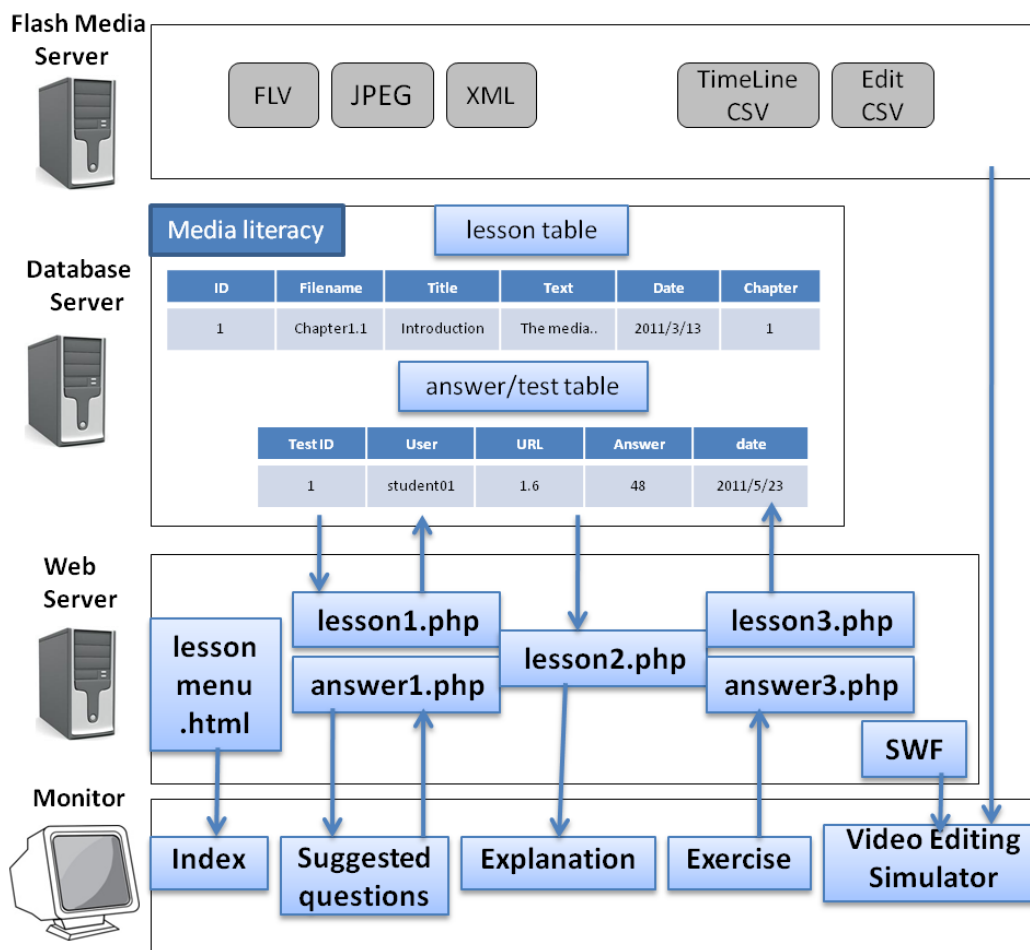
Figure 23. Technical Architecture

5.2.2   Tables in the Database Server

As shown in Figure 23, tables in the database server are used to receive students' submissions and store the contents of teaching materials. There are ten tables: a login table for recording students' login information, a lesson table for providing teaching materials, and eight answer tables for receiving students' answers on each lesson.

The login table includes fields called loginID, User, Pass, and Date, to record students' login id, user name, password, and the date. The lesson table includes fields of ID, FileName, Title, Text, Date, and Chapter to provide the id, lesson number, title, contents, date, and current section number. Fields in the answer tables include ID, User, URL, Answers, and Date to record the id, student's user name, current lesson number, students' answers to each question, and the date. Each of the four lessons has two

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corresponding answer tables: one for receiving answers to the suggested questions, and the other for answers to the exercises. Refer to Appendix 1 for properties and examples of these tables.

5.3 Organization of Lessons

Through this program, students are expected to understand the core concept of media literacy through analysis of television programs, visual contents, and other media and through creative practice of video editing and creating. Figure 24 outlines the contents of the four lessons.
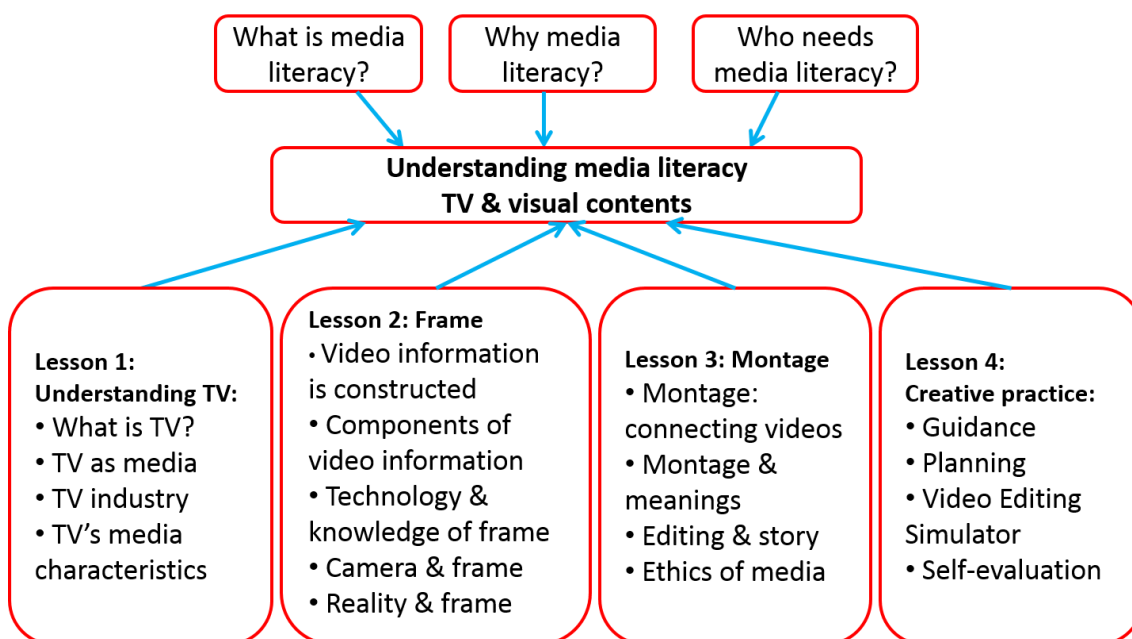
Figure 24. Organization of Lessons

5.3.1 Lesson 1: Understanding TV

Lesson 1 explains the concept of media literacy, the need for media literacy in our modern information society, and ways to study and improve media literacy. Also, TV is explained from the following viewpoints: TV as media, the TV industry, and TV's media characteristics. TV is identified as the dominant medium in today's society, having different meanings in its physical, information, and socio-economic layers [Figure 25].

The TV industry is explained in terms of its production costs, economic basis, and Nielsen ratings. TV's media characteristics are described in terms of the medium's physical and information layers, through comparison with movies and magazines.

In lesson 1, students are expected to gain a basic understanding of television and how it can be compared with other forms of media. They will also begin to extend their understanding of media literacy through TV into other types of media information.
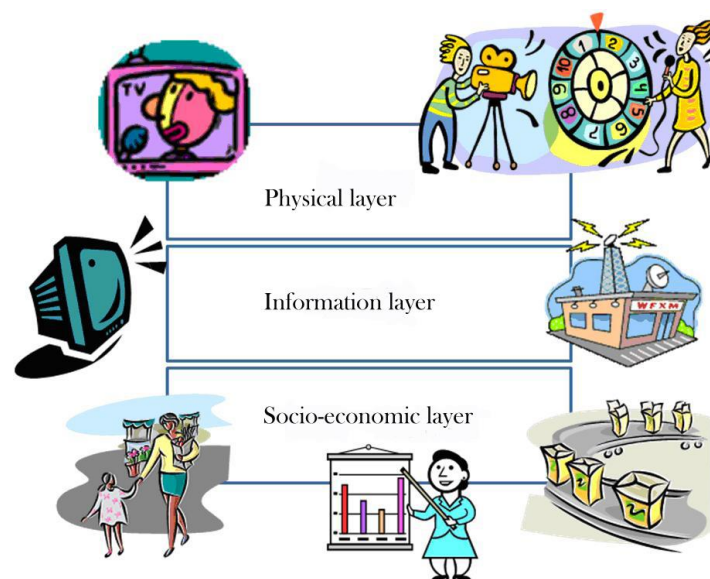
Figure 25. TV's Three Layers

5.3.2   Lesson 2: Frame

Lesson 2 interprets the concept of frame in media. All visual media such as photos and pictures have a frame in the physical sense. The frame physically surrounds the visual image, defining what we see. When we use different frames, the content of what we see is different, and so is the information communicated by the visual contents. As Figure 26 shows, the information inside frames A, B, and C is quite different. The frame signifies the selection of information that is considered to be most important or relevant within the entire picture. For example, as portrayed theoretically in Figure 27, the total event of a graduation ceremony contains considerable information from different perspectives, but only some of the information (such as "speech by the president", "students' happy smiles", or "girls wearing kimonos") is selected to become media

information. Scheufele[115] indicates that media's frame reorganizes everyday reality and it is an essential feature of media, turning pointless and other unrecognizable incidents into important events.
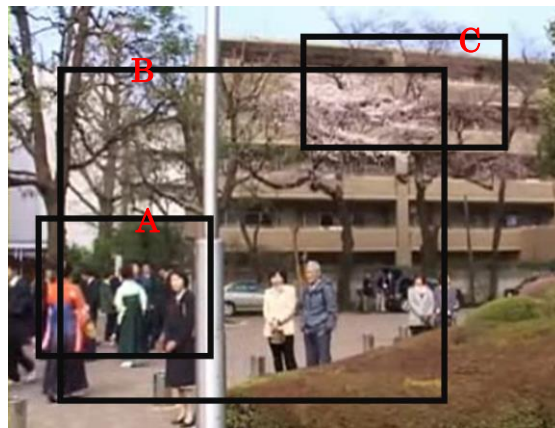
Figure 26. Frames in a Picture
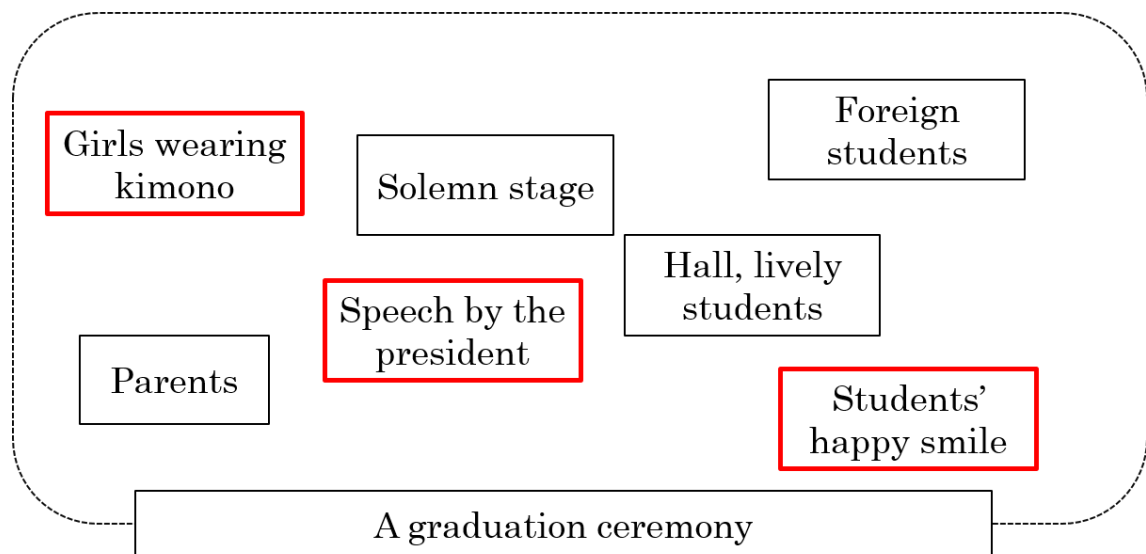
Figure 27. Frames within the Context of an Event

In Lesson 2, frame is interpreted from following viewpoints: components and processes for constructing visual contents, the physical frame of the camera, knowledge of physical frames, frames' effect in producing media information, and frames versus

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[115] Dietram A. Scheufele. *Framing as a Theory of Media Effects*. International Communication Association. 1999.

reality. Through identifying and comparing elements of videos, students are expected to understand that videos are composed of elements within frames. The concept of media frames is used to explain how some events that would be important to many people (such as pension system changes) might be neglected if another event (such as a celebrity's scandal) is reported more frequently. In media studies, we call this phenomenon the overshadowing effect.

Lesson 2 explains that videos are constructed with various components and that frame determines what will be shot or omitted. In a broader sense, frame means what is selected from the reality of an event to create a piece of media information with certain implications. Along with knowledge related to frame, the student also learns skills regarding how to select a frame for a certain piece of media information.

5.3.3   Lesson 3: Montage

Lesson 3 explains montage, or video editing in which a series of cuts is edited and connected into a sequence to create information, meaning, and story. Montage can create new meanings and have a powerful impact beyond that of the individual cuts. Like the concept of frame, montage can also be applied to general media information. As Figure 28 shows, information fragments (depicted as information 1, information 2, and information 3) are connected in a certain order to create a new piece of information.

The Flow of Information
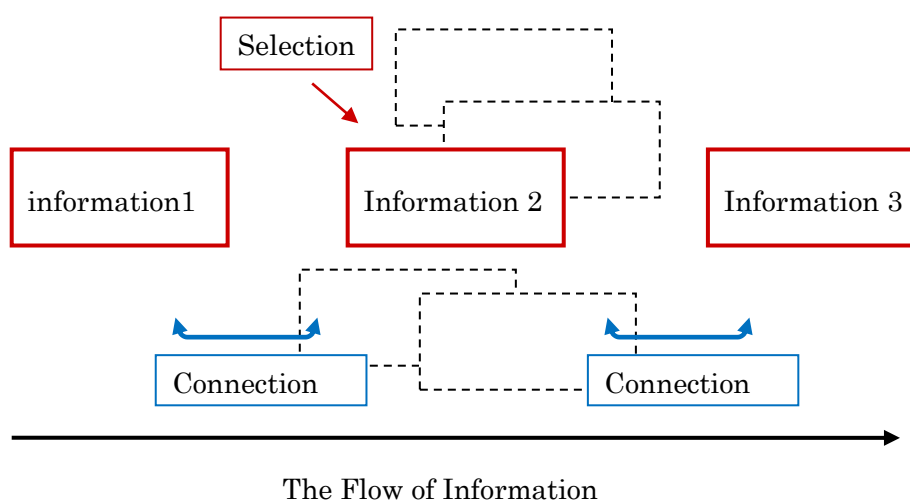
Figure 28. Montage: Connection of Information Fragments

In Lesson 3, montage is interpreted from the perspective of the relationship between montage and a video's meaning. The lesson also covers montage theory, how montage affects a video's story and theme, montage's effect in producing information, and the ethics and power of media. Examples are provided to demonstrate that replacing certain cuts in a video with others or changing the order of cuts transforms the video's meaning. When media messages are constructed through frame and montage, new meaning or information is created, different from the original reality of events. As Figure 29 shows, supposing that only the images with red frames are selected to create a piece of news, other information in the real event will be invisible to the audience. Furthermore, the constructed messages and information have strong power to influence us, particularly if we do not know how we are being influenced. Advertisements are very good examples in this regard, our consumption and behavior could be affected unconsciously by them.
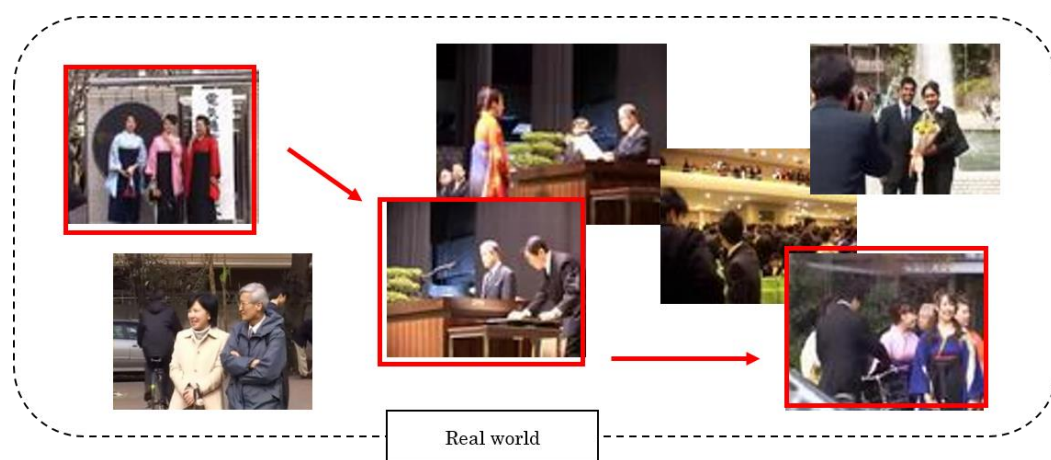
Figure 29. Media Messages and Reality

Through Lesson 3, students are expected to understand that montage can create meaning even though there is no physical connection between cuts in video making. Montage theory can also be applied to the construction process of general media information, showing how the themes of and impressions made by media information can be greatly altered. Also, students learn how to evaluate and create a piece of media information using their understanding of montage.

5.3.4   Lesson 4: Creative Practice

In Lesson 4, to better understand the decisive roles of frame and montage in creating videos, the VES is used as the platform for simulating the video editing and creation process. The VES provides 48 original videos from the 2006 graduation ceremony of the University of Electro-Communications. In general, each scene is represented by two shots taken from different angles, which are intended to facilitate students' understanding of frame. Although the subjects of the two shots are the same, their contents differ because their physical frames are different. Students' selection decision will affect the overall information and impression of the video that he or she wants to create. Dozens of scenes are provided, such as pictures of the hall, serious-looking graduates, the president, graduates in kimonos, excited graduates, foreign graduates, parents, and blossoming cherry trees. This collection enables students to understand how montage can function in assembling different shots and creating meanings. For example, if a student wants to give the impression that a serious graduation ceremony was held, he or she could connect a panoramic view of the hall in low angle, the president's speech, serious-looking graduates, and students receiving their degree certificates. On the other hand, to create a video of a happy graduation experience, one could use the blossoming cherry trees, graduates in kimonos, smiling graduates, excited graduates, and happy parents. Selection (frame) and connection (montage) of shots determine the construction of a video, with its theme, meaning, and overall information.

Some of the original videos' thumbnails are shown in Figure 30; detailed information on them is provided in Appendix 2.

Figure 30. Original Videos Contained in the VES

Students begin by watching these videos, and they then defines their own plan including a theme, frame, and montage. Next, they create their own video sets based on their plan and save them in the VES database. Finally, each student evaluates the created video sets by comparing them with the original plan.

The process of editing and creating videos in the VES involves first selecting original FLV videos and then resetting the starting and ending times and order of these selected videos (which is exactly the process of selection/frame and connection/montage). Through this process of simulated video editing and creating, students can deepen their understanding of how the meaning and information contained in videos can be constructed and changed through the use of selection/frame and connection/montage.

5.4 Organization of Teaching Steps

As explained in the program structure in section 3.4, teaching materials in each lesson are developed in five steps: suggested questions, basic explanations, advanced explanations, extension to media literacy, and exercises.

As the first step, suggested questions are provided to stimulate students' reflection on their understanding of TV, frame, montage, and editing and creating videos. Students' answers to these questions are submitted to the database, and they are then displayed in later steps for comparison and reflection. An example of suggested questions and the corresponding explanations presented in later steps appears in Figure 31 and 32.

This first step encourages students to think about related media issues and seeks to

spark curiosity about the following steps.

テレビと情報：モンタージュ

考えてみましょう。

前章では、ひとつの映像が、現実世界をどのように「フレーム」で切り取るかを学びました。
この章では、切り取られた映像と映像をどのように「結びつけるか」を中心に学びます。

まず、いつもと同じように、予備的な質問をします。チャットルームでお互いに相談しながら、答えてください。

Q1. 動画1、動画2、動画3を見比べてください。

動画1　動画2　動画3

いずれも4カットで構成されています。1カット目と4カット目は共通です。

Q1-1　それぞれの2カット目、3カット目に映っているものを記述してください。

動画1
2カット目 _____
3カット目 _____
動画2
2カット目 _____
3カット目 _____
動画3
2カット目 _____
3カット目 _____

Q1-2　全体の印象を記述してください。

Figure 31. An Example of Suggested Questions

モンタージュには意味がある

図1に示す通り、モンタージュは、カットとカットの間にあって、そこには「物理的には」何も写っていません。

しかし、ちょうど言語表現で、それぞれ意味を持った単語（青い、空、心）をあたらしいやり方で結びつけると（青い心）あたらしい意味が生じるように、「結びつける」というそのことによって映像にはあたらしい意味が生じると考えられています。

3.1 動画1,2,3の、2カット目、3カット目を記述し、全体の印象を答える

Your answer:

	2カット目	3カット目	全体の印象
動画1	【　一女生徒の顔（表情）　】	【　複数人の男子生徒　】	【　卒業する学生の心情や、これからへの希望を感じる夢に溢れる印象。　】
動画2	【　二人の男子生徒の顔（表情や行動）　】	【　印刷物を見ている男子　】	【　寝ていたり、学長を見ていなかったりとあまり決意等が感じられず、BGM等と相反して暗い印象。　】
動画3	【　ご来賓して下さった方や教職員と学長　】	【　体育館と桜、過ぎ去っていく人々　】	【　少し堅苦しい印象はあるが、卒業式の公正さと、桜による卒業の季節を感じさせる印象。　】

Q1.で見た動画1，動画2、動画3は、それぞれ4カットずつで構成されていて、1カット目と4カット目は、すべての動画に共通です（学長挨拶）。
2カット目3カット目に異なる映像を置くことで、全体の印象、あるいは「学長挨拶」の印象が変わることがわかるでしょうか。

Figure 32. An Example of Explanations in Teaching Materials

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In the second step, basic explanations of teaching materials are provided such as TV's concepts in physical, information, and social-economic layers, the components of videos, shot size, angle, and composition in frame selection, and basic theory of montage in film making. At this second step, students are stimulated to engage in initial cognitions about TV, media literacy, frame, and montage.

The third step aims to deepen students' understanding of media through advanced analysis of TV, frame and montage. The TV industry is interpreted through its production costs, economic basis, and Nielsen ratings. Frame is interpreted through a comparison of specific elements in several frames taken from a larger picture. Montage is explained in terms of its relationship with editing, story, and reality. Through this third step, students are expected to understand the creation process of videos and acquire the ability to analyze how videos are constructed using frame and montage.

In the fourth step, frame and montage are explained in the context of all media information. For example, the characteristics of films and magazines are presented in comparison with TV. In the process of constructing other types of media messages, frame and montage work in the same way as with videos. Even for general media information, frame and montage determine the selection and connection process, which makes media information different in some way from reality. Through the fourth step, students are expected to strengthen their overall understanding of media literacy concepts and to understand that the frame and montage schema can also be applied to explain the construction process of other types of media information. Further, integrating this step with the knowledge acquired previously, students should now be equipped both to analyze the construction process of media messages and to create media products using their understanding of frame and montage.

The fifth step provides exercises in which students restudy and check their understanding of knowledge elements in each lesson. One example is shown as Figure 33. Students are asked to choose the correct description about montage in Q1, and to compare two videos by comparing their cuts and the various cuts' influence on the overall impression made by the videos. Students' answers to these exercises are submitted into a database that will also be used for program assessment.

練習問題

Q1. 「モンタージュ」について、正しい答えすべてにチェックしなさい。

☐ 「モンタージュ」とは長い映像素材を二つ以上に分割することである
☐ 「モンタージュ」とは複数の映像を一つにつなぐことである
☐ 「モンタージュ」で複数の映像のつなぐ順番をかえても、映像そのものは同じなので、全体の意味は変わらない
☐ 「モンタージュ」は複雑なので、映像制作会社や番組制作会社の専門家しかおこなうことができない
☐ 「モンタージュ」すると嘘をつくことになるので、ニュースやドキュメンタリーでは原則として「モンタージュ」はおこなわない
☐ 「モンタージュ」の原理は、コンピュータによる映像制作が本格化したあとに考案された
☐ 「モンタージュ」するときには、前後の映像のショットサイズ、アングルなどの対応関係に注意しなければならない

Q2. 動画1と動画2は、1カット目が違い、2カット目以降は同じです。
一般に、映像制作では、同一の映像でも、前後にある映像が変わると印象が変わると言われています。
この現象について、動画1・動画2を例にとって考察しなさい。

動画1　動画2

Q2-1. 2カット目の人物から受ける印象（われわれの印象として、人物がどのような感情を持つと想像されるか）が動画1と動画2で違うとしたら、どのように違うか、推測して答えなさい
（自分は、違わないと思っても、多くの人がどう思うだろうかという観点から答えなさい）。

Q2-2. 上記の印象の違いは、前後のどのような映像にどのように影響されているのか、推測して答えなさい。

Figure 33. An Example of Exercise

5.5 Details of Teaching Materials

5.5.1   Guidance

Information provided before one begins this program includes two sections: "Guidance" and "Introduction." "Guidance" presents the objectives, origins, methodologies, and function of this program. The introduction interprets the following issues: What is media literacy? Why is it necessary and important? Who needs media literacy? How should one study media literacy? These fundamental questions should arouse students' interest regarding media literacy. Specific contents of the introduction are shown in Figure 34.

Figure 34. Contents of the Introduction

5.5.2　Lesson 1: Understanding TV

Five sections are provided in this lesson: suggested questions, TV as media, TV as industry, TV's media characteristics, and exercises.

In section 1.1, "Let's Think! (Suggested Questions)," the following questions with multiple answer choices are used to inspire students' reflection about TV: "Q1. What is TV as media?" "Q2. How much does one TV program cost?" "Q3. Who pays for the cost?" An example of this section is shown as Figure 35.

Figure 35. An Example of Suggested Questions in Lesson 1

Section 1.2, "TV as Media," answers Q1 (What is TV as media?) in terms of television's physical, information, and socio-economic layers.

Section 1.3, "TV as Industry," follows up on Q2 (How much does one TV program cost?) and explains the cost of producing TV programs. It then interprets Q3 (Who pays for the cost?), enabling students to comprehend the relationship between the program production company, the TV station, commercial sponsors, and the audience. In addition, Nielsen ratings and their relationship with TV commercials and the TV industry are also presented.

Taking Q3 as an example, students' own answers are displayed in red at the beginning. The program provides explanations on this topic. Students are expected to

deepen their understanding of the issues by comparing their own answers with the explanations given in the teaching materials [Figure 36].

Figure 36. An Example of Advanced Explanation in Lesson 1

Section 1.4, "TV's Media Characteristics," compares films, magazines, and TV with regard to their physical and information layers. The following characteristics of TV programs are summarized: high expressiveness, power, and the need to attract an audience. Furthermore, students are guided to think about the characteristics of other media, using the method presented for analyzing TV. Figure 37 shows a portion of this section.

Figure 37. An Example of Extension in Lesson 1

Section 1.5 contains exercises designed to help students examine their understanding of this lesson, such as TV commercials, TV's characteristics, Nielsen ratings, and the physical, information, and socio-economic layers of news. Figure 38 provides an example from this section.

Q3. テレビについて学習したことを参考にして、新聞というメディアを考えなさい

1.）新聞というメディアの物理的媒体は何か（複数可）

☐ 空気
☐ 光
☐ 紙
☐ プラスチック
☐ インク
☐ 絵具
☐ 電波

2.）新聞の運搬・伝送の容易さは、テレビよりも高いか低いか

テレビより　○　容易である　○　同等　○　容易でない

3.）
新聞というメディアの情報媒体は、雑誌と同様に「文字・画像」であり、情報特性もほぼ雑誌と同じです。しかし、新聞の発行部数は、日本の全国紙で数百万部に達し、雑誌メディアと購読者（受信者）像が大きく違います。新聞購読者（受信者）の情報層における特徴を、購読・閲覧における能動性・受動性の観点から説明しなさい。

a. 新聞の購読は、雑誌の場合に比べて　　○　能動的　○　同じ　○　受動的
b. 新聞の閲覧は、雑誌の場合に比べて　　○　能動的　○　同じ　○　受動的
c. 新聞の購読、閲覧の特徴を、3-1)、3-2)への答えを使って、自由に記述しなさい
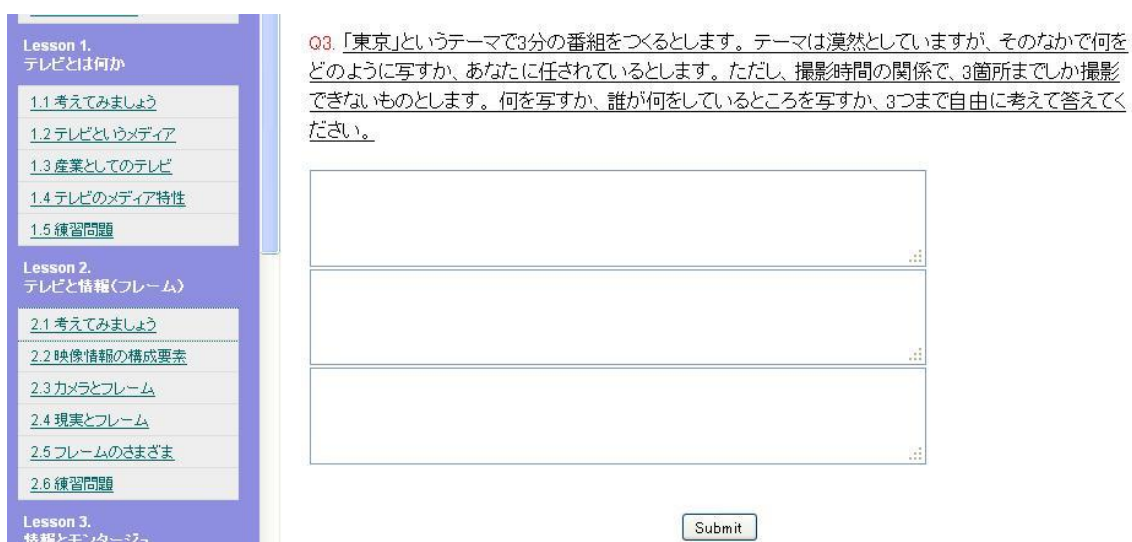
Figure 38. An Example of Exercise in Lesson 1

5.5.3 Lesson 2: Frame

Six sections are provided in Lesson 2 (Frame): suggested questions, components of visual information, camera and frame, reality and frame, frame technologies and knowledge, and exercises.

Section 2.1: "Let's Think! (Suggested Questions)," provides questions and videos designed to promote students' reflection on elements of visual contents. The questions are as follows: "Q1. Enumerate the components that make up the video provided." "Q2. Compare the components of two similar videos." "Q3. Consider the components involved in creating a video titled 'Tokyo.'" Q3 is shown in Figure 39.

Figure 39. An Example of Suggested Questions in Lesson 2

In section 2.2, "Components of Visual Information," students are expected to understand how frame works in creating videos using interpretations of Q1. First, photographers need to consider what should be shot. Second, they shoot the subject from a certain angle, with a certain shot size, in a certain frame and composition. Then, these shots are connected and edited to form a new video, which is examined in detail in Lesson 3 (on montage).

In section 2.3: "Camera and Frame," Q2 is interpreted. Frame exists in any media contents; only the contents inside the frame can be expressed, and the circumscription

of the frame is determined by the producers. With regard to general media information, frame determines what could and could not be shot; it signifies what is considered important from within the broader reality.

In section 2.4: "Reality and Frame," the issues of frame of information, reality and frame, and obscure effect are interpreted through an explanation of Q3. Frame has two meanings: the physical frame of the camera and the frame of information (i.e., what part of an event is considered important). Then, using shots from the UEC graduation ceremony as examples, both visual and textual frame interpretations are provided. Finally, the obscure effect is illustrated—that is, if a certain event is reported frequently, other events in the same time period are likely to be neglected. A part of this section is displayed in Figure 40.

Figure 40. An Example of Extension in Lesson 2

In section 2.5: "Frame Technologies and Knowledge," items helpful in understanding frame more fully are explicated in detail: shot sizes including long shot, full shot, medium shot, bust shot, closeup, and extreme closeup; camera angles including looking down, looking up, and eye-level; and composition including dominant(the center of interest), space for movement, and a third regulation.

In section 2.6, exercises to review this lesson are provided, covering comprehension of frame, effect of frame, reality and frame, emotional effect of shot size, camera angle, and obscure effect. A sample exercise is shown in Figure 41.

Q3. 『卒業式の公式情報』、『卒業生の不安と期待』の2つのコンセプトで動画をつくることにします。カット数は合計5カットにし、既に3つのカットは選んでいます（動画1）。残りの2カットを動画2、動画3のどちらか選びなさい。また、なぜその動画を選んだか、理由を書きなさい。

<u>動画1</u>　<u>動画2</u>　<u>動画3</u>

卒業式の公式情報

卒業生の不安と期待

[Submit]

Figure 41. An Example of Exercise in Lesson 2

5.5.4 Lesson 3: Montage

There are five sections in Lesson 3 (Montage): suggested questions, montage and meanings, editing and story, ethics of media, and exercises.

In section 3.1: "Let's Think! (Suggested Questions)," two thematic questions are presented. In Q1, three videos are provided. Each one has four cuts; the first and fourth cuts are the same, but the second and third vary. Students are asked to describe the second and third cuts of each video and to write down their overall impression of each video. Q2 asks students to watch two pieces of news about the same event, comparing their original cuts and the different effects of these cuts. Q1 is displayed in Figure 42.

Figure 42. An Example of Suggested Questions in Lesson 3

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In section 3.2, "Montage and Meanings," terminology including "frame," "cut," and "montage" is interpreted. Next, through explanations in response to Q1 and related figures, students learn that the overall impression and meaning of one video is determined by its shots and the order of the shots, which is related to montage's role in creating videos. Figure 43 shows an example. Then the fundamental theory and history of montage are presented. Finally, the lesson explains that just as frame exists not only in video but in other types of media messages, montage is also working in all types of media messages.

Figure 43. An Example of Basic Explanation in Lesson 3

In section 3.3, "Editing and Story," Q2 is interpreted to teach students that when information is constructed using frame and montage, a new story, different from the original reality, is also created. Additionally, various genres of TV programs and their relationship with frame and montage are also interpreted, including news, documents, reality shows, audience participation shows, variety programs, and dramas. The relationship between story and reality in TV programs is illustrated using Figure 44.

Program genres	Reality	Story
News		
Documents		
Reality show		
Audience participation show		
. . . .		
Variety program		
Drama		

Figure 44. Story and Reality in TV Programs

In section 3.4, "Ethics of Media," first an example is provided to help students realize the media's power to influence people strongly. Then another example, showing how the Nazis used the media to control the public consciousness, is narrated. Based on these explanations, students are expected to recognize that ethics is very necessary and important in the media realm, whether in the process of receiving or sending messages.

In section 3.5, exercise questions are used to help students review the lesson and solidify their understanding of montage, its influence, its use in various TV programs, and the importance of media ethics. An example regarding the influence of montage is provided in Figure 45.

Q2. 動画1と動画2は、1カット目が違い、2カット目以降は同じです。
一般に、映像制作では、同一の映像でも、前後にある映像が変わると印象が変わると言われています。
この現象について、動画1・動画2を例にとって考察しなさい。

動画1　動画2

Q2-1. 2カット目の人物から受ける印象（われわれの印象として、人物がどのような感情を持つと想像されるか）が動画1と動画2で違うとしたら、どのように違うか、推測して答えなさい
（自分は、違わないと思っても、多くの人がどう思うだろうかという観点から答えなさい）。

Q2-2. 上記の印象の違いは、前後のどのような映像にどのように影響されているのか、推測して答えなさい。

Figure 45. An Example of Exercise in Lesson 3

5.5.5　Lesson 4: Creative Practice through the VES

Lesson 4, on creative practice, contains four sections: guidance, planning, editing and creating videos through the Video Editing Simulator, and reflection.

Section 4.1 provides guidance on how to develop a plan for video creation. This program prepared two videos to illustrate use of the VES. Students are asked to make a one- to two-minute video from a certain point of view, using 48 shots from the 2006 UEC graduation ceremony. The specific instructional content is shown in Figure 46.

実習の進め方

- メディアリテラシー授業の最後に、これまで学んだことを生かし身につけるために実習をおこないます。
- 実習では、教材と同じようにweb上にある「仮想編集システム」を使って、撮影済みの動画を組み合わせることで、各自1-2分の映像コンテンツをつくります.
- 「仮想編集システム」の使い方は、以下のリンクを参照してください。
  リンク1：**仮想動画編集システム編集方法**

  リンク2：**仮想動画編集システム編集結果を閲覧方法**
- まず、「仮想編集システム」で使うことのできる動画素材を確認します。
- つぎに各自が制作企画を設定します。
- 制作企画では、
  1. テーマ
  2. 動画素材の選択方針
  3. 動画のモンタージュの方針
  4. 企画の自由な説明
     を各自設定し記述します。
- つぎにこの企画にもとづいて、「仮想編集システム」で編集作業をおこない、結果を保存します。
- 各自の制作企画と、制作した結果を表示しながら、企画がどの程度実現できているかについて、最後に考察を論述します。
- 課題の評価は次の2点でおこないます。
  1. 企画がどの程度達成できているか
  2. 達成度についての自己評価および考察が十分か
- なお、実習をすすめるにあたって、チャット・掲示板を使って他の学習者と自由に相談してかまいません。

実習課題

課題：電気通信大学卒業式について、「ある観点」からまとめた1-2分の動画コンテンツを作りなさい。

素材：電気通信大学2006年度卒業式を撮影した動画約150カット

環境：仮想動画編集システム

時間：企画から考察まで50分

左サイドバー：

Media Literacy TV @Kaneko Lab

Let's Talk
Media Literacy Chat Room

roomA
GroupA
GroupB

ガイダンス
ガイダンス
イントロダクション

Lesson 1.
テレビとは何か
1.1 考えてみましょう
1.2 テレビというメディア
1.3 産業としてのテレビ
1.4 テレビのメディア特性
1.5 練習問題

Lesson 2.
テレビと情報（フレーム）
2.1 考えてみましょう
2.2 映像情報の構成要素
2.3 カメラとフレーム
2.4 現実とフレーム
2.5 フレームのさまざま
2.6 練習問題

Lesson 3.
情報とモンタージュ

Figure 46. Guidance for Creative Practice in Lesson 4

In section 4.2: "Planning," students are asked to complete their video editing and creation plan containing three aspects: theme, principle of frame, and principle of montage. This plan will lead them to select and arrange specific videos in the next section, as explained in Figure 47. After previewing all original shots provided in the VES, students will determine from what perspective they will transfer the information on the graduation ceremony, which is directly related with the theme. Based on their newly acquired understanding of frame and montage, students will think how to select and connect shots to make their video. This process should strengthen students' skill in constructing media messages using the frame/montage schema.

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Figure 47. Planning for Creative Practice in Lesson 4

In section 4.3: "Editing through the VES," students log in to the VES, create their own videos based on their plan of theme, frame, and montage, and save them in the database, as explained in chapter 4.

In section 4.4, "Reflection," each student's plan as written in section 2 is transferred out from the database. Students log in to the VES to replay their created videos, compare their plans with the results, and prepare a self-evaluation and reflection. Refer to Figure 48 for details.

Figure 48. Students' Self-evaluation in Lesson 4

As a final activity, students are invited to submit their suggestions and comments about the program.

Chapter 6
IMPLEMENTATION

6.1 Hypotheses to be Evaluated

6.1.1   This Program is Effective in Improving Students' Understanding of Media Literacy

We created this web-based media literacy education program with an online video editing simulator (VES) to provide a creative practice platform, and also to develop teaching materials to help students understand how all media messages are constructed. The creative practice and teaching materials, which correspond to "writing" and "reading" respectively, combine to constitute a complete media literacy education program. It was expected that this program would improve students' understanding of media literacy. Comparison between a pre-test and a post-test was used to verify the program's effectiveness.

6.1.2   The Program Structure (Based on the Frame and Montage Schema) is Effectively Designed

As analyzed in section 3.1, the frame and montage schema can be used to explain the core question of media literacy, namely, how all media messages are constructed.[116] As explained in more detail in section 3.4, the program structure was organized based on the frame and montage schema, and it consisted of nine knowledge elements. It was hypothesized that the program structure should contribute to students' theoretical understanding of media literacy. In order to evaluate the rationality and effect of the program structure, improvement on each knowledge element between the pre-test and post-test was calculated, and their contribution to total improvement was analyzed.

6.1.3   The Creative Practice using the VES Contributes to Total Improvement

First, the frame and montage schema is abstracted from the VES, as explained in section 1.2. Second, the creative practice represents the "writing" part of this web-based

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[116] *Resource Guide: Media Literacy, Intermediate and Senior Divisions.* Ontario Ministry of Education. 1989. p18.

media literacy education program, as students practice video editing and creation through the selection (frame) and connection (montage) process, which could enhance the instructional effect of the "reading" part. Therefore, the creative practice was expected to contribute to total improvement. Its effectiveness was validated mainly through its correlation with improvement between the pre-test and post-test, and exercises at the end of each lesson. In addition, subjective evaluations, solicited by means of a survey questionnaire, were collected and analyzed.

6.2 Participants and Period

This program was delivered in the media literacy course for third-year students (around 20 years old) in the Department of Human Communication, University of Electro-Communications (UEC), from May 16 to June 6, 2011. The same professor taught two classes (15 weeks long) using the same teaching contents during the spring semester at UEC: a daytime class with 43 students (30 male, 13 female) and a night course with 35 students (28 male, 7 female). The experimental program delivery was conducted with both classes. Although they share the same curriculum, there are some differences between them. The daytime course students' average academic achievement score, according to the university's Assessment Report, was slightly higher than that of night course students.[117] Similarly, results of the pre-test in the present study also showed a slight difference between daytime and night students, as shown in section 7.1.2.

6.3 Procedure and Valid Data

Before students participated in the program, their understanding of media literacy was verified by a pre-test. Then a simple explanation about how to complete the program was provided to all participations. The students completed all four lessons during a two-week period, after which they took a post-test containing the same questions as the pre-test. Also, participants were asked to respond to a survey questionnaire. The contents of and evaluation methods for the pre-test and post-test, exercises, and the survey questionnaire will be introduced in sections 6.4 through 6.6.

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[117] University of Electro-Communications. *Investigation Report of Students' Academic Achievement*. Tokyo. 2011.

Valid data for analysis was selected from 46 students who fully completed this program and the pre- and post-tests. Among the 46 students, 27 were from the daytime course and 19 from the night course. As for survey questionnaire analysis, valid data were received from 36 students in the daytime course and 27 in the night course. These students completed both the entire program and the survey questionnaire.

6.4 Contents and Analysis Methods of the Pre- and Post-Test

The pre-test and post-test were developed to evaluate program effectiveness. As illustrated by the program structure in Table 1, the teaching materials of this program include nine knowledge elements; the pre-test and post-test were designed based on these elements, with one or two question items per element, taking into consideration the difficulty and amount of contents contained in the teaching materials. The test included 15 questions (two of which were divided into two sub-questions each) worth 170 points. The distribution of question items corresponding to each knowledge element is shown in Table 11.

Table 11. Distribution of Items in the Pre- and Post-Test

Category	Questions	Element (Score)
Understanding media and media literacy	Q1	1a(10)
	Q2	1c(10)
Understanding TV	Q4	1c(10)
	Q5	1b(10)
	Q6	1b(10)
Frame	Q3	2a(10)
	Q7	2a(10)
	Q8	2c(10)
	Q9_1	2b(10)
	Q9_2	2b(10)
	Q10	2b(10)
Montage	Q11_1	3a&3b(10)
	Q11_2	3a&3b(10)
	Q12	3b(10)
	Q13	3b(10)
	Q14	3c(10)
	Q15	3c(10)

Q1 and Q2 are conceptual questions on understanding media and media literacy. Questions from Q4 to Q6 are about the TV industry and components and characteristics of media. Q3 and questions Q7 to Q10 focus on the frame of visual contents, frame of information, and how frame affects the meaning of media information. Questions Q11 to Q15 are related to montage, the relationship of montage and story, how montage works in the process of creating media information, and media ethics. Among these questions, Q9 consists of two sub-questions (Q9_1 and Q9_2), as does Q11. There are multiple answer options for each question, and only one is correct. The participants were asked to select the correct answer for each question. The full text in Japanese is given in Appendix 3; some questions to be discussed below are shown in Table 12.

Table 12. Full Texts (in English) of Some Questions in the Pre- and Post-Test

Q1	People often say that "media literacy is necessary." Please choose the correct meaning of "media literacy" generally understood. 1).　　Being interested in contents of newspaper and television. 2).　　Ability to get information through Internet or mobile phone. 3).　　Critical attitude about the bias of media like newspaper and television. 4).　　Ability to properly understand and create media information, which includes various types: newspaper, television, Internet, and so on.
Q8	Suppose that you will make a video of one hour about the life and studies of one particular class of 30 students in an elementary school. Please choose the most recommended principle for making a documentary in this case. 1).　　Since there are 30 students, it's better to introduce everyone with 2 minutes a person. 2).　　Even if the number of presented students will be limited, we should show the whole school life and private life of the chosen students. 3).　　Because it is impossible to present the whole life of all students, it's reasonable to show certain activities of several chosen students. However, we should not forget that there are activities and students not presented. 4).　　Since it is the creator's intention that determines which students and which activities should be presented, the subjective opinion of the creator is much more important than anything else.

Q11	Suppose that you have following pictures to make a news story about weather telling "Today is hot." [Originally pictures are provided, but here only text explanations of the pictures are presented.] A.　People who are sprinkling water. B.　People who are walking in strong sunlight. C.　Children who are tired out in hot weather. D.　Children who are playing in the water. E.　A graph showing the usage of electric power.		
	Q11_1	Please choose the best combination of pictures for making a piece of news with the message: "Today is hard because of hot weather." 1)　　A—E—D 2)　　B－E－C 3)　　E－A－C
	Q11_2	Please choose the best combination of pictures for making a piece of news with message: "Although it's hot, people try various ways to get cool." 1)　　E－B－D 2)　　C－E－A 3)　　E－A—D

Total scores on the pre-test and post-test were calculated for each student, and then a t-test was performed using the difference in the mean value of the results for the pre-test and post-test to evaluate the effect of the program. Overall improvement and the change on each knowledge element were analyzed. I calculated average scores on each question in the pre-test and post-test and their distribution across elements of the program structure. In addition, average scores of each element in the pre-test and post-test were calculated. Results were observed from the perspective of each lesson, each teaching step, and each element, and the analysis will be discussed based on these observations. Moreover, correlation analysis was conducted to evaluate the contribution of improvement on each element to the total improvement.

Results of the pre-test and post-test were also examined through cluster analysis to consider the feasibility of group learning using the program structure.

Furthermore, the difference in our program's effect between daytime and night groups was examined through an independent samples t-test using the difference in the mean values of the pre-test and post-test results for the two groups.

6.5 Analysis of Results on the Exercises and Creative Practice

As explained in section 5.4, the last step in each of Lessons 1, 2, and 3 provides exercises for students to check what they have learned in each lesson. The distribution of exercises in each knowledge element is shown in Table 13; the questions have a total assigned value of 220 points. Lesson 4 provides a platform for creative practice through editing and creating videos; this activity is given a total value of 120 points.

Details regarding the exercises and practice are presented in Table 13 and the following discussion.

Table 13. Category and Score Distribution of Exercises and Practice

Category	Exercises	Full Score
1a	L1_E1(3 sub-questions)	30
1b	L1_E2	10
1c	L1_E3(3 sub-questions), L1_E4(3 sub-questions)	60
2a	L2_E2(2 sub-questions)	20
2b	L2_E1	10
2c	L2_E3(2 sub-questions)	20
3a	L3_E1	10
3b	L3_E2(2 sub-questions), L3_E3 (3 sub-questions)	50
3c	L3_E4	10
Practice	L4_E1(3 sub-questions), L4_E2	120

In the exercises for Lesson 1, issues related to TV and media literacy are covered, with topics such as the calculation of commercial message(CM) and Nielsen ratings, factors affecting Nielsen ratings, the characteristics of newspaper and station posters, and a comparison of different media at the physical and information layers. There are 12 sub-questions included within 4 questions, valued at a total of 100 points.

The exercises in Lesson 2 investigate students' understanding of frame with questions related to physical meaning, visual and emotional effects of a frame, and comprehensive utilization of a frame in creating videos. The five sub-questions included

in three questions are valued at 50 points.

The exercises of Lesson 3 test students' understanding of montage, including montage's effect on a video's meaning, specific characteristics of TV genres, and utilization of media ethics. Seven sub-questions are presented within four main questions, valued at a total of 70 points.

Specific contents of exercises are shown in Table 14.

Table 14. Contents of Exercises and Practice

Lesson	Category	Exericse Contents
Lesson 1	1a	E1. CM time takes 20% of the whole prime time in Japanese TV program. Suppose there is a one hour TV program in prime time, please calculate the number and revenue of CM in this program, and the lowest Ratings with certain conditions.
	1b	E2. What kinds of methods can be used by TV stations to raise Ratings?
	1c	E3. Please chose the right descriptions about newspaper's characteristics as media.
		E4. Please describe the physical medium, information medium, characteristics, and audience's behaviour of Station Poster.
Lesson 2	2a	E1. Please chose the right descriptions about frame.
	2b	E2. Two pictures are provided, they are long-shot shooting and chose-up shooting respectively. Please compare their effects on situation explanation and feelings expression.
	2c	E3. Please chose the appropriate video for "official news of graduation ceremony" and "anxiety and expectation of graduates"respectively, and give the reasons.
Lesson 3	3a	E1. Please chose the right descriptions about montage.
	3b	E2. Please describe how montage affects the overall impression of videos using examples.
		E3. Please compare drama, document, and reality show from viewpoints of character, acting, story, frame, and montage.
	3c	E4. With understanding of media ethics, please chose correct descriptions about news.
Lesson 4 (Practice)	All elements	You will create one video in the VES, please write down the theme of the video with your frame and montage principles.
		Please compare your planning with created video, and write down your self-evaluation.

Exercises in Lesson 1, 2, and 3 were developed based on the program structure, and their scores can be distributed into each element of the program structure. To clearly analyze each element in the exercise, I calculated the average score of each element and analyzed the scores by comparing them with results on the pre-test and post-test.

In Lesson 4, as explained in section 5.5.5, students are asked to define one theme from his or her viewpoint, using the principles of frame and montage, and then to evaluate the resulting video by comparing it with the pre-set theme and the two principles. Each of the four items (theme, principle of frame, principle of montage, and self-evaluation) is given 30 points, for a total of 120 points.

Also, each student's video plan, including theme, principle of frame, principle of montage, and self-evaluation, was collected, along with the videos created by each student. A professor who has taught media literacy at UEC for more than 10 years compared each student's plan and the video carefully to determine whether they were consistent with each other. The professor gave scores for each student's use of theme, frame, and montage. Furthermore, the professor also examined students' self-evaluations to check their understanding of the frame and montage schema, giving scores for the self-evaluation.

Creative practice was analyzed through average scores and their correlation with results on the exercises and the pre-test and post-test.

6.6 Contents and Analysis of the Survey Questionnaire

After the students had completed the program, a survey questionnaire was administered to evaluate their subjective impressions of it, using a 5-point Likert scale from 1 (do not agree at all) to 5 (strongly agree). The instructions stated, "This questionnaire asks for your opinion on this program. For each of the following items, circle the number (1 to 5) that most closely corresponds with your opinion."

The survey questionnaire was designed to gather students' impressions regarding their view of the appropriateness of a 50-minute lesson, the interest generated by and ease of understanding the teaching materials, their improvement in understanding

media literacy, and the program's learning outcomes, especially regarding the VES. Moreover, this questionnaire also confirmed whether the system was working as expected, as well as students' comprehension of its interface and operability.

Specific contents of the survey questionnaire are shown in Table 15.

Table 15. Contents of Survey Questionnaire

Items	Description
S1	Did the system work properly? 1.Yes 2.No
S2	If the answer of Q1 is [NO], please describe the problems.
S3	The interface and operability of this system was easy to understand. 1 2 3 4 5
S4	50 minutes for each chapter was appropriate. 1 2 3 4 5
S5	Teaching materials were interesting. Overall 1 2 3 4 5 Lesson 1 1 2 3 4 5 Lesson 2 1 2 3 4 5 Lesson 3 1 2 3 4 5 Lesson 4 1 2 3 4 5
S6	Teaching materials were easy to understand. Overall 1 2 3 4 5 Lesson 1 1 2 3 4 5 Lesson 2 1 2 3 4 5 Lesson 3 1 2 3 4 5 Lesson 4 1 2 3 4 5
S7	Your understanding of media literacy was improved by this program. Overall 1 2 3 4 5 Lesson 1 1 2 3 4 5 Lesson 2 1 2 3 4 5 Lesson 3 1 2 3 4 5 Lesson 4 1 2 3 4 5
S8	This program was effective positively. Overall 1 2 3 4 5 Lesson 1 1 2 3 4 5 Lesson 2 1 2 3 4 5 Lesson 3 1 2 3 4 5 Lesson 4 1 2 3 4 5

The percentage of students giving each answer on each question was calculated, overall and separately for the daytime and night course students. Statistical significance was calculated using a chi-square test to determine whether students' impression of each lesson was significantly positive or not. Also, students' average scores on the pre-test and post-test, degree of improvement, and performance on the exercises was compared with whether they evaluated the VES positively or negatively. Participants' open-ended comments on the program were also collected.

Chapter 7

EVALUATION RESULTS

7.1 Evaluation of Overall Improvement

7.1.1 Data from the Pre-Test and Post-Test

As mentioned in section 6.4, the pre-test and post-test are equal in difficulty, containing the same 17 questions (when one counts the two pairs of sub-questions) worth 170 points. The evaluation included a comparison of the pre-test and post-test results, using average scores. On some questions, many students gave correct answers in the pre-test, so very little difference in learning performance was observed in those cases. It is possible that the low difficulty level of these questions affected some statistical results regarding improvement overall or by element.

7.1.2 Overall Improvement on the Pre-Test and Post-Test

I performed one-sample t-tests for the results of the pre-test and post-test. For daytime course students, the average score of participants on the pre-test was 136.30 (t (26) = 49.008, p = .000) with a standard deviation of 14.45; for the post-test, it was 146.30 (t (26) = 50.767, p = .000) with a standard deviation of 14.97. For night course students, the average score on the pre-test was 130.00 (t (18) = 38.012, p = .000) with a standard deviation of 14.91, and for the post-test it was 140.00 (t (18) = 44.402, p = .000) with a standard deviation of 13.74 [Table 16]. The highest possible score was 170.

Table 16. Average Scores on the Pre-Test and Post-Test

	Mean	N	Std. Deviation	Std. Error Mean
Daytime_Pre	136.296	27	14.45102	2.7811
Daytime_Post	146.296	27	14.97386	2.88172
Night_Pre	130	19	14.90712	3.41993
Night_Post	140	19	13.74369	3.15302

I then perform paired-samples t-tests using the differences in the mean values of

the results for the pre-test and post-test. The results suggested that students' improvement in media literacy was statistically significant. For daytime course students, the average score improved from 136.30 to 146.30 (t (26) = -3.824, d = 13.59, p = .001) for an increase of 7.337%. For night course students, the average score improved from 130.00 to 140.00 (t (18) = -2.121, d = 20.55, p = .048) for an increase of 7.692%. The improvements by the daytime and night course students are indicated in Figure 49, 50, and 51.
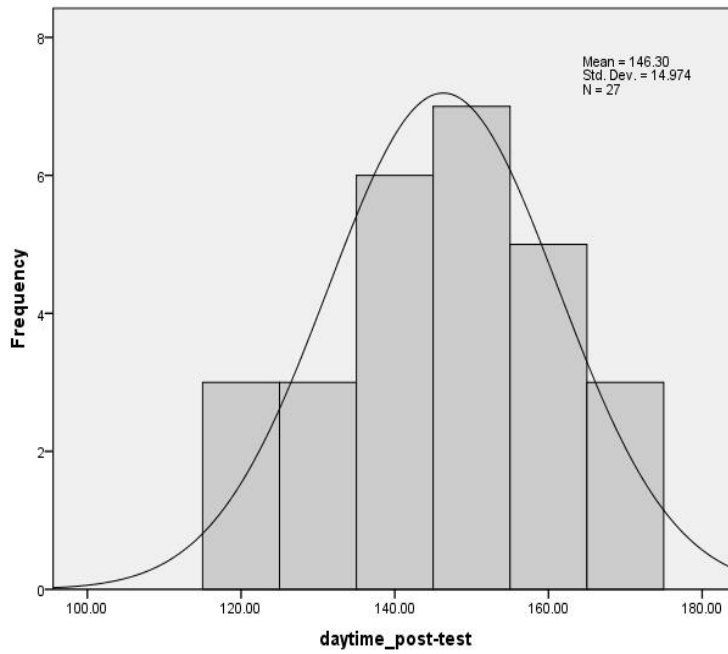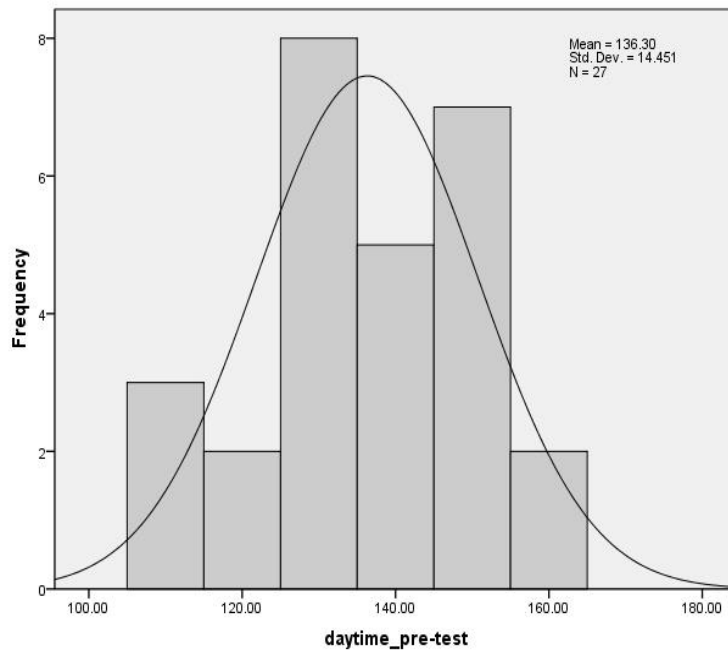
Figure 49. Histogram of the Pre-test and Post-test, Daytime Course
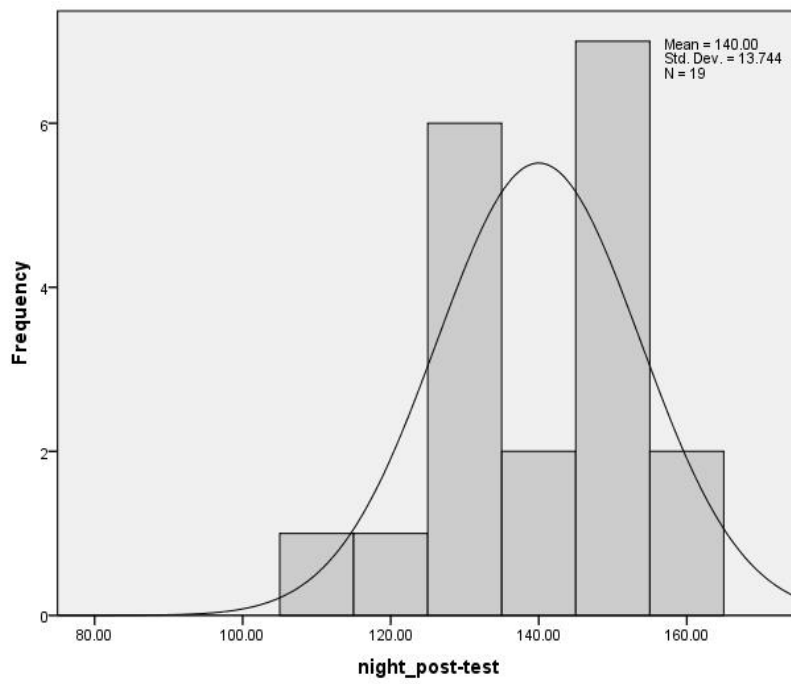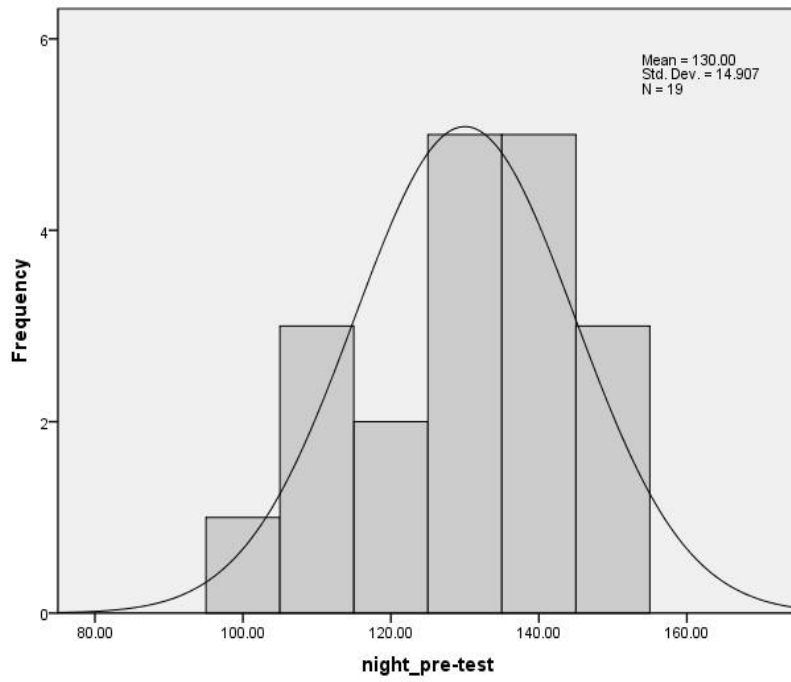
Figure 50. Histogram of the Pre-test and Post-test, Night Course
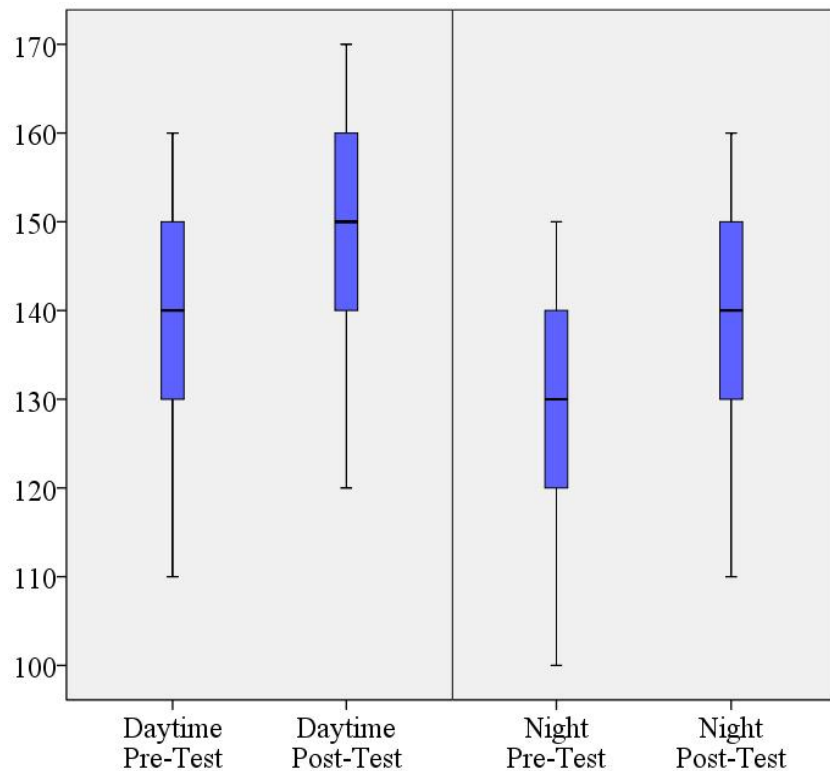
Figure 51. Boxplot of Pre-test and Post-test.

Overall improvement between the pre-test and post-test suggests that this web-based media literacy education program increased students' overall understanding of media literacy. However, the level of improvement varied by knowledge element; some of them showed sufficiently good results but others did not. I analyze each knowledge element in detail in section 7.2, noting their respective improvement, contribution to overall improvement, and problems identified.

7.1.3   Overall Subjective Evaluation Results from the Survey Questionnaire

The survey questionnaire was designed to gather participants' subjective impressions of the program. Evaluation was conducted through calculating the number and percentage (P) of participants who relatively and strongly agreed (Agree), moderately agreed (Moderately Agree), and somewhat agreed or did not agree at all (Do Not Agree) from the 5-point Likert scale answers. The statistical significance values specified were calculated using Pearson's chi-squared test (χ2), comparing the combined number of participants who relatively agreed, strongly agreed, or moderately agreed to

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the number of students who somewhat agreed or did not agree at all. The results are shown in Table 17 and Table 18 for daytime and night course students, respectively.

Table 17. Results of Chi-square Test (Daytime), Survey Questionnaire

Items	Description	Daytime(Number(Percentage))			x^2 (df=2)	Sig.
		Agree (%)	Moderately Agree(%)	Do not Agree(%)		
S1	Work properly	23(62.16)		14(37.84)	2.189(1)	0.139
S2	If [NO]					
S3	Interface & Operability	16(43.24)	10(27.03)	11(29.73)	1.676	0.433
S4	50 minutes	16(43.24)	15(40.54)	6(16.22)	4.919	0.085
S5	Interest					
	overall	23(62.16)	12(32.43)	2(5.41)	17.892	0.000
	lesson 1	27(72.97)	8(21.62)	2(5.41)	27.622	0.000
	lesson 2	24(64.86)	11(29.73)	2(5.41)	19.838	0.000
	lesson 3	20(54.05)	11(29.73)	6(16.22)	8.162	0.017
	lesson 4	18(48.65)	11(29.73)	8(21.62)	4.27	0.118
S6	Easy to understand					
	overall	19(51.35)	13(35.14)	5(13.51)	8	0.018
	lesson1	14(37.84)	18(48.65)	5(13.51)	7.189	0.027
	lesson 2	18(48.65)	16(43.24)	3(8.11)	10.757	0.005
	lesson 3	18(48.65)	13(35.14)	6(16.22)	5.892	0.053
	lesson 4	23(62.16)	7(18.92)	7(18.92)	13.838	0.001
S7	Improvement					
	overall	28(75.68)	9(24.32)	0(0.00)	9.757	0.002
	lesson 1	24(64.86)	12(32.43)	1(2.70)	21.459	0.000
	lesson 2	24(64.86)	12(32.43)	1(2.70)	21.459	0.000
	lesson 3	25(67.57)	11(29.73)	1(2.70)	23.568	0.000
	lesson 4	23(62.16)	10(27.03)	4(10.81)	15.297	0.000
S8	Effectiveness					
	overall	25(67.57)	10(27.03)	2(5.41)	22.108	0.000
	lesson 1	27(72.97)	9(24.32)	1(2.70)	28.757	0.000
	lesson2	24(64.86)	12(32.43)	1(2.70)	21.459	0.000
	lesson 3	21(56.76)	13(35.14)	3(8.11)	13.189	0.001
	lesson 4	22(59.46)	10(27.03)	5(13.51)	12.378	0.002

Table 18. Results of Chi-square Test (Night), Survey Questionnaire

Items	Description	Night(Number(Percentage))			x^2 (df=2)	Sig.
		Agree(%)	Moderately Agree(%)	Do not Agree(%)		
S1	Work properly	21(87.5)		3(12.8)	13.500(1)	0.000
S2	If [NO]					
S3	Interface & Operability	8(33.33)	11(45.83)	5(20.83)	2.25	0.325
S4	50 minutes	9(37.50)	14(58.33)	1(4.17)	10.75	0.005
S5	Interest overall	17(77.27)	3(13.64)	2(9.09)	19.182	0.000
	lesson 1	18(75.00)	5(20.83)	1(4.17)	19.75	0.000
	lesson 2	19(79.17)	3(12.50)	2(8.33)	22.75	0.000
	lesson 3	14(58.33)	7(29.17)	3(12.50)	7.75	0.021
	lesson 4	10(41.67)	6(25.00)	8(33.33)	1	0.607
S6	Easy to understand overall	19(79.17)	5(20.83)	0(0.00)	8.167(1)	0.004
	lesson1	14(58.33)	8(33.33)	2(8.33)	9	0.011
	lesson 2	14(58.33)	7(29.17)	3(12.50)	7.75	0.021
	lesson 3	11(45.83)	10(41.67)	3(12.50)	4.75	0.093
	lesson 4	15(62.50)	8(33.33)	1(4.17)	12.25	0.002
S7	Improvement overall	21(87.50)	3(12.50)	0(0.00)	13.500(1)	0.000
	lesson 1	18(75.00)	6(25.00)	0(0.00)	6.000(1)	0.014
	lesson 2	20(83.33)	4(16.67)	0(0.00)	10.667(1)	0.001
	lesson 3	16(66.67)	8(33.33)	0(0.00)	2.667(1)	0.102
	lesson 4	11(45.83)	12(50.00)	1(4.17)	9.25	0.010
S8	Effectiveness overall	21(87.50)	2(8.33)	1(4.17)	31.75	0.000
	lesson 1	17(70.83)	6(25.00)	1(4.17)	16.75	0.000
	lesson2	18(75.00)	4(16.67)	2(8.33)	19	0.000
	lesson 3	20(83.33)	4(16.67)	0(0.00)	10.667(1)	0.001
	lesson 4	18(75.00)	6(25.00)	0(0.00)	6.000(1)	0.014

As shown in Table 17 and Table 18, both daytime and night course students evaluated this program as positive and enjoyable in general. Specifically, the percentages of participants who relatively agreed (4) and strongly agreed (5) on the 5-point Likert scale answers were significant for each lesson with regard to the following aspects: comprehension of teaching materials (daytime: P (percentage) = 62.16%, df = 2, p = .000; night: P = 77.27%, df = 2, p = .000), interest in the program (daytime: P = 51.35%, df = 2, p = .018; night: P = 79.17%, df = 2, p = .004), improvement in understanding media literacy (daytime: P = 75.68%, df = 2, p = .002; night: P = 87.50%, df = 2, p = .000), and learning effect (daytime: P = 67.57%, df = 2, p = .000; night: P = 87.50%, df = 2, p = .000).

However, the ease of understanding the teaching materials was not evaluated as

positively by either daytime and night course students. Some terms, sentences, or expressions in the teaching materials might be a little difficult to understand. This problem should be carefully considered for future improvement. Also, the interface, operability, and proper functioning of the program did not receive strongly positive evaluations. These problems are directly related with the evaluation of the VES; details of the results and discussion will be provided in section 7.3.

7.2 Evaluation of the Program Structure

7.2.1 Improvement on Elements between the Pre-Test and Post-Test

As illustrated in section 3.4, the program structure consists of nine knowledge elements. In order to know the educational effect of the program structure, improvements on each knowledge element in the pre-test and post-test were analyzed. I calculated average scores for each question and distributions of the pre-test and post-test in the program structure. Then, average scores on the pre-test and post-test and improvement on each element were calculated for both the daytime and night course students, as indicated in Table 19.

Table 19. Improvement of Elements between the Pre-test and Post-test

Category (full score)	Daytime Course(N=27)				Night Course(N=19)			
	pre-test average	post-test average	improvement	std. deviation of improvement	pre-test average	post-test average	improvement	std. deviation of improvement
1a(10)	8.889	8.148	**-0.741(-8.333%)**	4.744	7.368	8.421	1.053(14.286%)	5.671
1b(20)	14.074	16.667	2.593(18.421%)	7.642	13.158	14.737	1.579(12.000%)	5.015
1c(20)	14.815	15.926	1.111(7.500%)	7.511	14.737	16.316	1.579(10.714%)	6.882
2a(20)	14.815	16.296	1.482(10.000%)	7.698	13.684	16.316	2.632(19.231%)	8.719
2b(30)	25.185	28.148	2.963(11.765%)	6.086	25.789	27.368	1.578(6.122%)	8.983
2c(10)	8.889	8.889	.000(0.000%)	2.774	8.947	7.895	**-1.053(-11.765%)**	3.153
3a(10)	9.444	8.889	**-0.556(-5.882%)**	2.887	8.421	9.474	1.053(12.500%)	3.566
3b(30)	23.519	25.185	1.667(7.087%)	7.206	23.158	24.737	1.579(6.818%)	7.827
3c(20)	16.667	18.148	1.482(8.889%)	6.015	14.737	14.737	.000(0.000%)	5.774

To clearly note the improvement on each element, the improvement percentage is calculated from the data in Table 19 and is shown in Table 20.

Table 20. Improvement Percentage of Each Element

		a	b	c	Average***
Lesson 1	daytime	**-8.33**	18.42	7.5	5.86
	night	14.29	12	10.71	12.33
	average*	2.98	15.21	9.11	9.1
Lesson 2	daytime	10	11.77	**0**	7.26
	night	19.23	6.12	**-11.77**	4.53
	average*	14.62	8.94	**-5.88**	5.89
Lesson 3	daytime	**-5.88**	7.08	8.89	3.36
	night	12.5	6.82	**0**	6.44
	average*	3.31	6.95	4.44	4.9
	Average**	6.97	10.37	2.56	6.63
average*: Average of daytime and night course					
Average**: Average of each step					
Average***: Average of each lesson					

When viewed by lesson, the improvements in Lessons 1 and 2 are significant, except for element 1a for the daytime course students and element 2c for both daytime and night students. As for Lesson 1, average improvements on elements 1a, 1b, and 1c were 5.86% for daytime course and 12.33% for the night course, demonstrating a positive effect. Regarding Lesson 2, the average improvements for the daytime and night students were 7.26% and 4.53%, respectively, revealing the apparent contribution of this lesson (on frame) to students' total improvement. The average improvements in Lesson 3 were 3.36% and 6.44% for daytime and night students, respectively. Although the improvements on Lesson 3 were less than those on Lessons 1 and 2, the results still indicate some positive effect.

From the viewpoint of teaching steps, the improvements in steps a and b were significant overall. Concretely, the average improvements on steps a and b were 6.97% and 10.37% respectively. Particularly for category b, the average improvements by daytime and night students on all lessons are evident, at 15.21%, 8.94%, and 6.95% for Lessons 1, 2, and 3, respectively. As for step c, the results were not as good as those for steps a and b. This is particularly notable in the average scores for 3c for night course

students, and on 2c for both groups (0% for daytime course, -11.77% for night course). Nevertheless, there was an overall improvement on step c of 2.56%, suggesting a slight positive value of step c.

From the perspective of each element, significant improvement was observed among both daytime and night course students on elements 1b, 1c, 2a, 2b, and 3b. Elements 1a and 3a improved only for night students, and element 3c improved only for daytime course. As for element 2c, no improvement is observed in either group.

To find possible explanations for those elements where the improvements are not as well as expected, I checked the pre-test and post-test again. Elements 1a, 2c, and 3a were composed of only one question each (1a is Question 1; 2c is Question 8; 3a is Question 11). The average scores for these elements (1a and 3a for daytime students, 2c for both daytime and night students) on the pre-test were so high that it was difficult to make improvement, as mentioned in section 7.1.1. As shown in Table 19, the average score on element 1a among daytime students was 8.889 out of 10; on element 2c, it was 8.889 out of 10; and on element 3a, it was 9.444 out of 10. Meanwhile, the average score on element 2c was 8.947 out of 10 for the night students. These high average scores meant that any possibility of improvement would be eliminated by a few mistakes on the post-test. The results might be better if the difficulty of the above questions were increased.

Moreover, questions related to these elements were somewhat ambiguous, possibly increasing the error rate of these questions. As for element 1a, which refers to Question 1 (Q1), students might be more likely to select the correct answer if "the most" were added before "correct meaning of media literacy" in the description of the question. As for element 3a, the answer options on Q11_2 were somewhat confusing, as another option besides the correct one could be partially correct. As for Q8 in element 2c, the Japanese expression for Q8 is somewhat difficult for students to understand (see Table 12).

With respect to element 3c, improvement was observed only within the daytime course. Comparing the questions on the pre-test and post-test with the teaching materials showed that Q15 in element 3c covered the values used by the BBC to judge

their editorials, a question of considerable difficulty. Besides, this topic is not explained in detail in the teaching materials.

7.2.2 Correlation between Elements' Improvement with Total Improvement in the Pre- and Post-Test

In order to investigate the significance of each element's contribution further, a correlation analysis was conducted between student improvement on each element and total improvement. As shown in Table 21, a significant correlation was observed in elements 1b, 2a, and 2b for both daytime and night students at the 0.1 level (for daytime course, $R(1b) = .444$, $p = .020$; $R(2a) = .368$, $p = .059$; $R(2b) = .698$, $p = .000$; for night course, $R(1b) = .431$, $p = .065$; $R(2a) = .682$, $p = .001$; $R(2b) = .421$, $p = .072$). For elements 1a, 3b, and 3c, a correlation was observed only for night students ($R(1a) = .477$, $p = .039$; $R(3b) = .415$, $p = .078$; $R(3c) = .468$, $p = .043$). Significant correlations were not observed for elements 1c, 2c, or 3a for either daytime or night students.

Table 21. Correlation of Each Element's Improvement with Total Improvement

		a		b		c	
		R	p	R	p	R	p
Lesson 1	daytime	.298	.131	.444	.020	.151	.453
	night	.477	.039	.431	.065	-.236	.331
Lesson 2	daytime	.368	.059	.698	.000	.102	.612
	night	.682	.001	.421	.072	.257	.288
Lesson 3	daytime	.147	.464	-.020	.923	.000	1.000
	night	.227	.349	.415	.078	.468	.043

As explained in section 7.2.1, elements 1b, 1c, 2a, 2b, and 3b had significantly improved scores from the pre-test to the post-test for both daytime and night students. Furthermore, improvement on elements 1b, 2a, and 2b was significantly correlated with total improvement for both groups. This result means that these three elements have significant educational effect not only by themselves but also in the whole program structure.

As for element 1a, the improvement level and correlation with total improvement were observed only for night students. It is possible that the factor described in section 7.2.1, the low difficulty of Q1, led to the unsatisfactory results for daytime course.

Elements 1c and 3b also had significant improvements for both daytime and night students. However, a correlation between element 1c's improvement and total improvement was not observed for either group, and correlation of element 3b occurred only for night students. Thus, although the educational effects of these two elements were not negative, it is difficult to reach a clear conclusion on their relationship with the program structure.

The results for elements 2c, 3a, and 3c are somewhat confusing. As for element 2c, its improvement was not significant for either group, and neither was its correlation with total improvement. Element 3a was significantly improved for night students, but its correlation was not significant for either group. Element 3c improved only for daytime students but no correlation was observed; on the other hand, the correlation with total improvement was significant for night students, even in the context of zero improvement. Therefore, a clear conclusion is hard to draw for these three elements.

7.2.3   Discussion of Elements' Improvement and Their Correlation with Total Improvement

Based on the above analysis, the educational effect of the program structure and the frame/montage schema will be discussed in this section. The improvement and correlation with total improvement are significant for elements 1b, 2a, and 2b. Therefore, these elements can be considered well designed in relation to the overall educational effect of the program structure. With respect to element 1a, the results possibly could be better if the question in the pre-test and post-test were improved, resulting in a similar effect to elements 1b, 2a, and 2b. These elements correspond to the basic and advanced explanations in Lessons 1 and 2, on TV, the foundation of media literacy, and frame.

This program was developed based on the frame/montage schema. According to analysis results of the pre-test and post-test, Lesson 1 (TV and basis of media literacy)

and Lesson 2 (frame) have considerable educational effect, except in step c. The strategy of studying the entire process of "reading" and "writing" information using the frame/montage schema appears to be effective to some extent. However, the effect of montage is still not satisfactory. Further efforts to improve this section are warranted.

With respect to teaching steps, the educational effect of step c in all lessons, on the extension to overall understanding of media literacy, is less than expected. In general, it is very difficult to learn knowledge with a high level of abstraction, in contrast to studying specific knowledge using specific examples. It is possible that the abstract knowledge needed to understand overall media literacy (step c), such as metaphorically understanding a frame, understanding montage on the level of information, and the function of the frame/montage schema in creating various types of information, requires additional time and more detailed teaching materials to achieve more positive outcomes. This program is limited to four sessions of 50 minutes each, which is probably not enough for adequate extension to overall media literacy. It is necessary to provide more detailed and concrete content for step c. It is proposed to expand this program to 15 weeks in the future.

Accordingly, the results of the pre- and post-tests suggest that the effect of this program is positive overall. The teaching materials including the VES (practice) are organized using the frame/montage schema. The lessons, moving sequentially from teaching general knowledge about media and TV to teaching frame and montage in Lessons 2 and 3, respectively, are generally acceptable. As for the teaching steps of Lessons 1, 2, and 3, after offering suggested questions, each lesson has three steps: basic explanation, advanced explanation, and extension to understanding of media literacy in general. Although the outcome for teaching step c is not as good as expected, teaching steps a and b in Lessons 1, 2, and 3 is obviously effective.

7.2.4   Results of Elements in the Exercises

To analyze the program structure in the exercises, average scores for each element are calculated as shown in Table 22. Average scores for elements 2b and 3c were significantly lower than the others for both daytime and night students. Element 2b

investigates participants' abstract and diversified understanding of frame, whereas element 3c inquires about their understanding and utilization of media ethics. According to sections 7.2.1 and 7.2.2, element 2b was highly evaluated, so the question on this element in the exercise might be overly difficult. Element 3c's improvement between the pre-test and post-test was zero (Table 20) and the exercise score was also zero (Table 22) for night students. The difficulty of the question related to this element might be too high. Also, the teaching materials for element 3c may not be sufficiently detailed and concrete, as explained in section 7.2.3.

Table 22. Average Scores of Knowledge Elements in the Exercise

Category	Daytime Course(N=27)			Night Course(N=19)		
	Mean	Std. Deviation	Correct Rate	Mean	Std. Deviation	Correct Rate
1a(30)	25.185	6.427	0.84	21.053	10.485	0.702
1b(10)	5.185	5.092	0.519	4.211	5.073	0.421
1c(60)	36.407	10.693	0.607	26.750	9.349	0.446
2a(20)	16.296	4.065	0.815	13.421	7.081	0.671
2b(10)	3.333	4.804	0.333	2.105	4.189	0.211
2c(20)	10.123	6.761	0.506	10.351	6.373	0.518
3a(10)	6.667	4.804	0.667	5.263	5.130	0.526
3b(50)	35.222	10.821	0.704	30.632	10.029	0.613
3c(10)	1.852	3.958	0.185	0.000	0.000	0
Total(220)	140.272	27.278	0.638	113.785	29.291	0.517

7.3 Evaluation of the VES

7.3.1   Correlation Analysis of Practice with the Pre- and Post-Test, and Exercises

The VES practice provides students with a platform for experiencing video editing and creation. It was expected to be helpful for improving students' media literacy, as well as in connecting students' overall understanding of all knowledge elements in the program structure.

The average scores of daytime and night students were almost the same. The

daytime students' average was 68.704 with a standard deviation of 17.13; the night students averaged 70.000 with a standard deviation of 15.986. The highest possible score was 120. As shown in Table 23, the average scores of each item (theme, frame, montage, self-evaluation) in the practice do not show a significant difference for both daytime and night course.

Table 23. Average Scores of Creative Practice

One-Sample Statistics								
	N	Theme	Frame	Montage	Self-evaluation	Sum	Std. Deviation	Std. Error Mean
Daytime	27	16.667	17.222	16.482	18.333	68.704	17.1303	3.29673
Night	19	17.368	17.105	17.105	18.421	70	15.98611	3.66746

A correlation between practice and improvement from the pre-test to the post-test was observed for daytime students (R = .394, p = .021). This result suggests that the creative practice makes some positive contribution to total improvement and is thus helpful in improving students' media literacy. For the night course, no significant correlation between practice and improvement from the pre-test to the post-test was observed. It is possible that the problems described in section 7.3.2, including students' difficulty in understanding the system's operation and the fact that some short videos did not stream as expected, may have reduced the effectiveness of the practice.

Further, a significant correlation between practice performance and total score on knowledge elements in the exercise was observed for the night group (R = .405, p = .043), but the correlation was weak for the daytime group (R = .247, p = .107). This suggests that practice could reflect an overall understanding of knowledge elements in the program structure for the night group, but only to a limited extent for the daytime group.

7.3.2   Subjective Evaluation of the VES from the Survey Questionnaire

As mentioned in section 6.3, 63 students' data (36 from the daytime course, 27 from the night course) were used in analysis of the survey questionnaire. According to the results, the VES was evaluated as relatively innovative, engaging, and effective for

understanding video editing and creation. As Figure 52, 53, and 54 show, the number of students giving the VES a rating of 3 or higher (at least moderately agreeing) on interest, improvement in understanding media literacy, and learning effect was 55, 58, and 58, respectively, out of the 63 students.
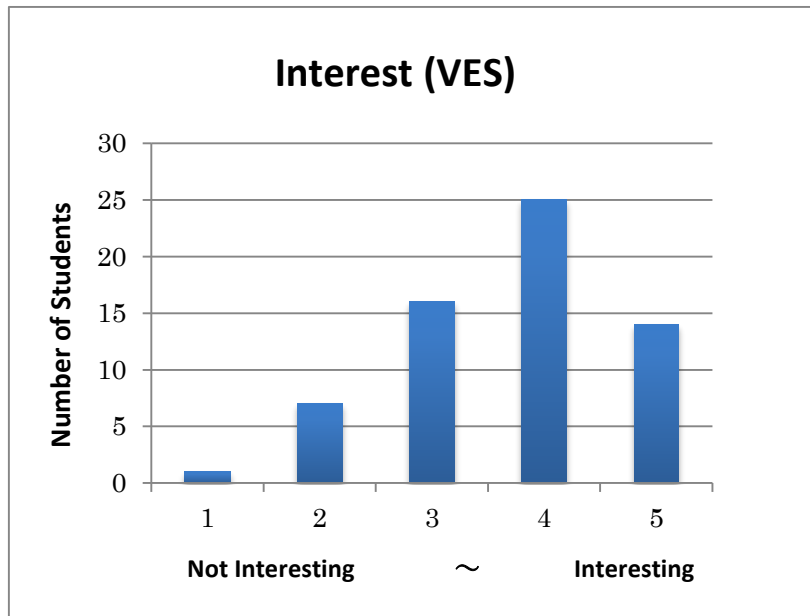
Figure 52. Results of Interest in the VES
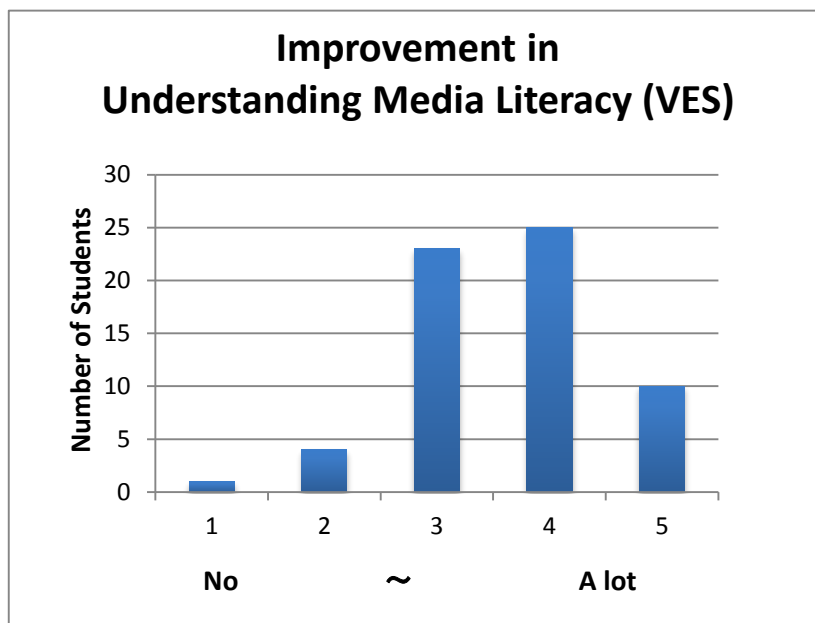
Figure 53. Results of Improvement in Understanding Media Literacy in the VES
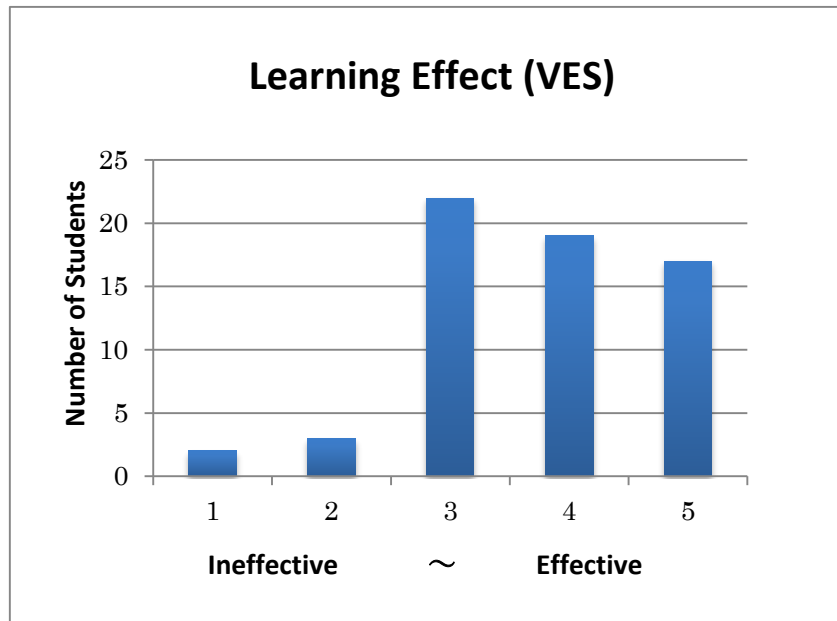
Figure 54. Results of Learning Effect in the VES

Furthermore, students in the daytime course who evaluated the VES with a rating greater than or equal to 3 on all three evaluation items had higher average scores on the pre-test, post-test, and exercises than students who did not give three high ratings: for the pre-test, 138.571 to 128.333; for the post-test, 149.048 to 136.667; for improvement, 10.476 to 8.333; and for the exercises, 141.528 to 135.875. Among the night students, only one gave a less positive rating of the VES, so no statistical comparisons can be made between the two groups.

Moreover, positive open-ended comments on the VES were also given as follows: "At the fourth lesson, the video editing idea is very interesting," and "The system is helpful for understanding the process of editing and creating videos."

However, according to the feedback about the system's operational status, some short videos in the VES did not stream smoothly. In addition, students had a difficult time understanding the interface and operability of the VES. In the future, I will plan to adjust the VES and provide an illustration to explain its operation.

7.3.3   Discussion of the VES

The VES is evaluated through correlation analysis with performance on the

exercises, improvement from the pre-test to post-test, and subjective results from the survey questionnaire. There was a correlation between creative practice and improvement from the pre-test to the post-test, which shows that the VES is somewhat helpful in enhancing students' understanding of media literacy. However, the correlations are not strong enough to justify a definitive conclusion. Also, a correlation between the creative practice and the exercises was observed, which suggests that the VES could reflect students' overall understanding of this program to some extent.

Results of the survey questionnaire indicate that most students had a positive impression of the VES, particularly for its learning effect, improvement in understanding media literacy, and ability to generate interest. Also, students who evaluated the VES more positively in the survey questionnaire had higher average scores on the pre-test, the post-test, and exercises than those who did not.

As explained in section 3.1, our program is designed on the premise of the VES. Therefore, the VES can be evaluated not only by itself, but also implicitly through the evaluation of the overall program and the program structure. According to the positive evaluation results of the overall educational program in section 7.1 and the program structure in section 7.2, it can be inferred that the VES contributes to students' improvement in media literacy itself and also to overall improvement.

7.4 Other Evaluation Results

7.4.1. Cluster Analysis

Overall evaluation of the pre-test and post- test suggests that this program is effective for improving students' media literacy in general. However, each student's basic knowledge of media literacy before starting this program is different. It is possible that this program may be especially effective for some students with particular basic knowledge. Cluster analysis allows the grouping of students on the basis of their similar basic knowledge.

Therefore, cluster analysis using the scores on each element in the pre-test and post-test for both daytime and night students was conducted so as to assess the possible value of using group instruction. Agglomerative hierarchical clustering was used for

sample classification to normalized data, using squared Euclidean distances as a measure of similarity. Similar classification patterns are gained by the method of average linkage (between groups). Students are classified as one group when two conditions are met: the number of the cluster is greater than or equal to five, and the rescaled distance is at about 10.

Regarding daytime course students, the dendrogram (part) of the pre-test samples obtained is shown in Figure 55. We find one special cluster composed of students 12, 19, 6, 23, and 15. This cluster scored high on knowledge elements 2c, 3b, and 3c but low on other elements in the pre-test; it had a much higher average score (162 of 170) than all participants (146.296 of 170) in the post-test, and a better improvement of 15.714%, compared to the average improvement of 7.337%. Elements 2c, 3b and 3c are related to advanced explanation and extension of frame and montage. Students in this cluster may be described as having good intuitive understanding of media literacy but lack of structured knowledge. This cluster suggests that for high-performing students like these five, giving basic knowledge and structured instruction through a teaching program like this one is especially helpful in fostering understanding of media literacy.

Finding ways to group students appropriately and provide suitable group instruction is among the possibilities for future improvement of the program.
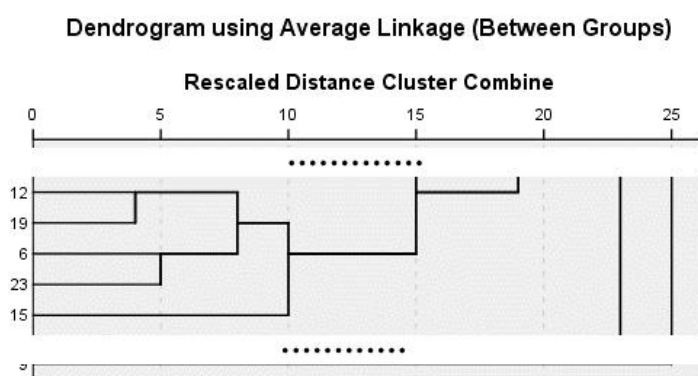
Figure 55. Dendrogram of the Pre-test for Daytime Course Students

As for the night students, all but one are linked together at a rescaled distance of about 13 for the post-test, indicating students' weak homogenization after completing

the program. This suggests that the structure and teaching materials of the program are rational to a certain extent for night students.[Figure 56].

Dendrogram using Average Linkage (Between Groups)
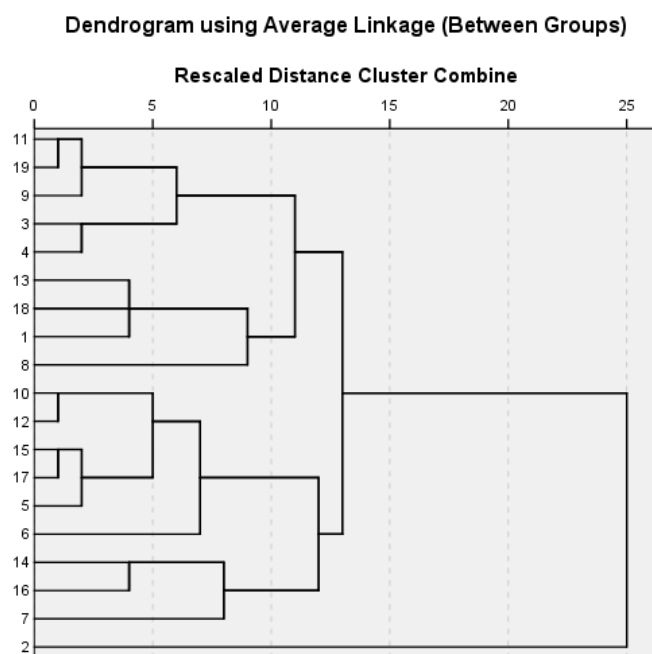
Figure 56. Dendrogram of the Post-test for Night Course Students

7.4.2.   Difference between Daytime and Night Students in Educational Effect

The average score on all knowledge elements in the exercises was higher for daytime (140.272 of 220) than for night students (113.785 of 220). Moreover, the average score on the post-test was also higher for daytime (146.30 of 170) than night students (140.00 of 170). This indicates that daytime students' understanding of media literacy was better than that of night students after completing the program.

However, the improvement from the pre-test to the post test and the practice results were almost the same for daytime and night students. For daytime students, the improvement was 7.337% and the practice score was 68.704; for night students, the improvement was 7.692% and the practice score was 70.000 [Table 24].

Table 24. Comparisons between Daytime and Night Students

	Total Score	Daytime	Night	Comparison
Pre-Test	170.00	136.30	130.00	Daytime is higher
Post-Test	170.00	146.30	140.00	Daytime is higher
Exercise	220.00	140.27	113.79	Daytime is higher
Improvement of the Pre- and Post-Test	None	7.337%	7.692%	Almost the same
Practice	120.00	68.70	70.00	Almost the same

Furthermore, an independent samples t-test was performed to assess the difference in the mean improvement from the pre-test to the post-test for the two groups. There was not a meaningful difference at the 5% significance level ($F = 5.664$, $t = .000$, $df = 44$, $d = .000$, $p = 1.000$), which indicates that the difference in the program's educational effect between daytime and night students was not significant.

Chapter 8

CONCLUSIONS AND FUTURE RESEARCH

8.1 Conclusions

This project developed a web-based media literacy education program including an online video editing simulator (VES). The VES is an online virtual platform for simulating the video editing and creation process. Its inclusion was intended to address the inadequacy of creative practice in web-based media literacy education. Teaching materials of the program are organized based on a frame and montage schema, to deliver an overall understanding of media literacy.

The main functions of the VES are video streaming and editing through timeline control. In the VES, students can practice editing and creating videos by manipulating frame and montage. From the perspective of frame, students select original videos that they want to use. From the perspective of montage, student change the starting and ending times as well as the sequence of the selected videos.

The program abstracts the paired concept of frame and montage from the VES to explain the creation process of videos and other types of media information. Based on the frame and montage schema, the teaching materials of this program are organized with four lessons and five teaching steps in each lesson. Lessons cover the introduction of TV and media literacy, frame, montage, and creative practice. Teaching steps include suggested questions, basic explanation, advanced explanation, extension to media literacy, and exercises. Through the program, students are expected to improve their overall understanding of media literacy by mastering the process of creating media information.

Furthermore, the educational effect of this program was evaluated through its implementation in a media literacy course at the University of Electro-Communications.

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The pre-test and post-test, exercises in each lesson, and a survey questionnaire were used for the assessment.

Comparisons of participants' scores between the pre-test and post-test revealed that this program generally has a positive effect in increasing students' understanding of media literacy. Two groups (daytime and night course students) participated in the evaluation. For daytime students, the average score improved from 136.30 to 146.30 with an increase of 7.337%. For night students, the average score improved from 130.00 to 140.00 with an increase of 7.692%.

The effect of the frame/montage schema and the program structure were confirmed to some extent through improvements on the content of each lesson and on each teaching step, and on the correlation of these improvements with total improvement. Improvements on Lessons 1, 2, and 3 were 9.1%, 5.89%, and 4.9%, respectively, and on teaching steps a, b, and c they were 6.97%, 10.37%, and 2.56%, respectively. Furthermore, improvement on elements 1a, 1b, 2a and 2b was positively correlated with total improvement, which means that they have educational effect not only by themselves but also in the program structure.

The practice's positive correlations with the exercises and with improvement from the pre-test to the post-test indicate that the practice could reflect students' overall understanding of this program to a certain extent. Correlation between practice and total score on knowledge elements in the exercises was $R = .405$ ($p = .043$) for the night group and $R = .247$ ($p = .107$) for the daytime group. Correlation between practice and improvement from the pre-test to the post-test was $R = .394$ ($p = .021$) for daytime students.

Results of the survey questionnaire indicated students' generally positive impressions of this program with regard to generating interest, improvement in understanding media literacy, and learning effect, particularly for the VES. The number

of students giving the VES a rating of at least 3 on a 5-point scale for generating interest, improvement in understanding media literacy, and learning effect was 55, 58, and 58, respectively, out of 63 students.

### 8.1.1. Original Contributions

1. The VES for Creative Practice in a Web-based Media Literacy Education Program

Creative practice is often the most challenging part of media literacy education due to its difficulty of implementation, especially through a web-based learning system. As the last lesson of this program, an online VES was developed with functions of video editing and streaming through timeline control, providing students with a creative practice platform. Through the VES, students can simulate the process of video editing and creation, which helps them to master the process of creating videos and other types of media information. Video editing software such as Adobe Premier and Microsoft Expression Encoder and websites like Cell Sea[118] and Clip Cas[119] provide video editing functions, but managing and controlling editing data through them is difficult, and concepts of media literacy are not integrated in the video editing process. The VES is incorporated within this media literacy education program through a frame and montage schema. The video editing process can be deconstructed using a paired concept of frame and montage, and the program is structured based on frame and montage.

The evaluation determined that the VES was effective in improving students' overall understanding of media literacy, not only by itself but also the program.

2. The Frame/Montage Schema for Overall Understanding of Media Literacy

Most media literacy education projects teach students to understand one type of

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[118] http://www.cellsea.com/. Extracted on May 10, 2015.
[119] http://clipcast.jp/. Extracted on May 10, 2015.

media information, like Admongo[120] for advertising literacy or the Center for News Literacy[121]. Few media literacy education projects cover an overall understanding of media literacy.

The core concept of media literacy is that all media messages are constructed. Thus, understanding the construction process of all media messages is the key to gaining an overall understanding of media literacy. The present program proposes a frame/montage schema, abstracted from the video editing and creation process, to explain the construction process of all media information.

In filmmaking, frame and montage determine the construction process. Similarly, frame and montage are applicable to the video creation process through the selection and connection of shots. For media information in general, frame signifies the selection of media information from the whole real world, and montage denotes the art of connecting fragments of information to create an integrated message. So the frame and montage schema can be used to explain the construction process of not only visual contents but also all media information. Thus, an overall understanding of media literacy can be achieved using the frame and montage schema.

As analysed in sections 7.1 and 7.2, evaluation results indicate that the frame and montage schema has a positive impact in helping students to improve their overall understanding of media literacy.

8.1.2. Chapter Summaries

Chapter 1 is the introduction. First, the background of media literacy, web-based learning, and creative practice are presented, leading to a discussion of the significance and original features of this study. Then the purpose of this study and research methods

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[120] http://www.admongo.gov/. Extracted on May 10, 2015.
[121] http://www.centerfornewsliteracy.org/. Extracted on May 10, 2015.

for developing and evaluating this program are discussed. Finally, the structure of this thesis is presented.

Chapter 2 reviews previous studies of media literacy education through web-based learning. It points out that creative practice, a very important part of media literacy education, is commonly missing as only a few prior programs provide this kind of practice. Several websites do provide video editing and creating services, but without incorporating them into a media literacy education program. Therefore, this study proposed to develop a web-based media literacy education program with a platform for creative practice that could be naturally incorporated into the educational program. The frame and montage schema is used to realize this incorporation. As the schema derives originally from filmmaking theory, their background in this discipline is discussed at the end of this chapter.

Chapter 3 describes design principles and program structure. Following the logic of selection and connection, it abstracts the frame and montage schema from the filmmaking process to understand the construction of videos, other types of media messages, and media information in general, thereby enabling an overall understanding of media literacy. Further, the creative practice of media literacy education is emphasized through the implementation of a VES, by which students can have the experience of editing and creating videos. The educational targets are senior high school or university students, along with citizens at comparable education levels. This program focuses on TV and visual media contents. Based on the above design principles, the structure of this program is constructed.

Chapter 4 describes the VES, an online virtual platform for simulating the video editing process, which enables students to edit and create videos online. In this chapter, the technical architecture and interface of the VES are introduced in detail. Then, the video editing functions, including choosing original FLV files, editing videos through

timeline control, playing videos, and saving created videos, are interpreted in detail. This chapter also explains how to realize the listing students function and chatting function.

Chapter 5 describes the program in detail, starting with a general overview and the system architecture. The program structure comprises four lessons: TV and the basis of media literacy, frame, montage, and creative practice. Each lesson is studied in five steps, including suggested questions, basic explanation, advanced explanation, extension to media literacy, and exercises. Specific teaching contents and teaching steps are presented meticulously in two sections: organization of lessons and organization of teaching steps. Lastly, details of the teaching materials are illustrated using examples.

Chapter 6 explains the program's implementation and evaluation. The pre-test and post-test, in addition to exercises at the end of each lesson and a survey questionnaire, are used for evaluation. Before and after participating in the program, the students' understanding of media literacy was verified by administration of the pre-test and post-test. The exercises in each lesson are answered as students complete the program. After completing it, participants were asked to respond to a survey questionnaire. Contents of the pre-test and post-test, exercises, and the survey questionnaire are presented in detail, and evaluation methods are also described.

Chapter 7 analyzes evaluation results from the pre-test, post-test, exercises, and survey questionnaire. Comparisons of participants' scores between the post-test and pre-tests reveal that this program is generally effective for increasing students' understanding of media literacy. Positive subjective evaluation is also confirmed through analysis of the survey questionnaire. For detailed explanation of the overall improvement, I analyzed improvement on each element in the program structure and its correlation with overall improvement. The effect of the program structure and the frame and montage schema are confirmed through the above analyses. The positive

correlation between satisfaction with the VEW and both performance on the exercises and improvement from the pre-test to the post-test indicates that the practice indeed reveals students' overall understanding of this program and is helpful for overall improvement. Furthermore, results of the survey questionnaire also indicate students' positive impressions of the VES.

Additionally, cluster analysis was used to verify the rationality of the program's structure and assess the possibility of group learning using this program in the future. The results indicate a positive effect of the program structure to some extent, and that some group-based instruction could be effective, especially with night students. Overall learning effects of the program did not differ significantly between daytime and night students.

On the other hand, evaluation results also indicated that improvements are required for the teaching materials on some knowledge elements, especially in Lesson 3 (montage) and step c (extension to overall media literacy), including specifically a more detailed explanations of the relationship between TV genres and reality, shot size, the BBC's editorial ethic, and optimization of the VES for easier use. Additionally, several questions in the pre-test and post-test also need modification.

Chapter 8, the conclusion, reviews the content of the thesis and discusses future research.

8.2　Future Research

8.2.1.　Improvements of This Program

Better educational outcomes may be gained by making improvements in teaching materials and the VES. A more detailed explanation of montage and of extension to overall media literacy, along with improved discussion of particular points such as TV genres and reality, shot size, and the BBC's editorial value, is required. As for the VES,

an illustration explaining the operation is necessary, and modification of the settings for several short original videos is also needed. An appropriate group learning instructional method could lead to more interesting and effective outcomes.

8.2.2. Evaluation with a Control Group

Evaluation could be more meaningful and interesting if the study also incorporated data collected from a control group, or people who have a similar background as those participating in the program but who do not participate themselves. After the target group has completed the program, one could compare understanding of media literacy between the control group and target group to measure whether there is a difference, which would verify the educational effect of the program from another perspective. Evaluation with a control group is a useful alternative evaluation method and would be helpful in gathering evidence of the program's effectiveness.

Meanwhile, a comparative evaluation between students completing the whole program and students receiving only Lessons 1, 2, and 3 (without practice through the VES) could reveal the educational effect of the VES more directly and clearly.

8.2.3. Extension to Other Media

This program does not cover all media sectors; rather, it focuses on TV and visual media contents. But its ultimate objective is to teach the essential idea of media literacy and to improve students' overall understanding of media literacy concepts. In order for this to become a comprehensive and systematic education program for media literacy, expansion of teaching materials to other types of media and to media information as a whole are required. Adding teaching materials about film, prints, the Internet, and social networks will make this program more plentiful and adequate.

8.2.4. Analysis of the Impact Mechanism of Media Messages and Other Perspectives for Improving Media Literacy

1. How do media messages affect us?

All media messages are constructed with implications, but how are we affected by these implications? The first step toward answering this question is to find out how implications are embedded in the construction process of media messages. Then, the knowledge structure of the participants should be analyzed. Finally, we should study the mechanisms of how these implications change the knowledge structure of participants and therefore exert influence on our consciousness. With regard to the impact mechanisms of media messages, some new methods for improving media literacy could be proposed. The study of the impact mechanism of media messages could be useful in providing a new perspective on media literacy education.

2. Another Perspective for Media Literacy Education

This study has proposed using the frame/montage schema to teach the construction process of media messages. However, another perspective for media literacy education, based on the analysis of participants' knowledge structure regarding media and media literacy, could also be considered. The knowledge structure of media is related to students' understanding of media contents, the media industry, media effects, the media world, the real world, and the self. Through the impact of media messages on our knowledge structure of media, the knowledge structure of media literacy itself can be analysed. Based on the knowledge structure of media literacy, a new perspective for media literacy education could be developed.

8.2.5. Web-based Media Literacy Education in China

There was no research on media literacy in China before 1997. Bu Wei, a researcher

at the Institute of Journalism, Chinese Academy of Social Sciences, published a paper called "The Meaning, Contents and Methods of Media Education" in 1997,[122] thereby initiating research on media literacy education in China. However, there was not much more progress until 2004. During the past decade, there has been a little more progress, several related institutes were founded, various scholars started to pay attention to media literacy, and related courses were opened in several universities. However, most research in China has been limited to introducing foreign situations or describing general problems without specific implementation approaches or methods. Research and education on media literacy in China are still at an early stage, with great space for development. It would be very meaningful for me to become involved in media literacy education in China by helping to provide the needed theoretical underpinnings, new educational methods, and practical experiences.

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[122] Bu Wei. The meaning, contents and methods of media education. *Journal of Modern Communication.* Vol. 1, 1997. pp29-33.

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Relevant Papers

1. **Authors:** Linjuan MIAO, Masakatsu KANEKO

   Title: Development of a Web-based Media Literacy Education Program with Video Editing Simulator

   Publication: Journal of Japan e-Learning Association. Vol.12, pp14-23. July, 2012.

   (Related to Chapter 3, 4, 5)

2. **Authors:** Linjuan MIAO, Masakatsu KANEKO

   Title: Evaluation of a Web-based Media Literacy Education Program with Video Editing Simulator

   Publication: Journal of Japan e-Learning Association. Vol.14, pp70-80. July, 2014.

   (Related to Chapter 6, 7)

Oral Presentations

1. **Authors:** Linjuan Miao, Tanaka, Kaneko

   Title: A Proposition of Web-based Video Editing Simulator and Its Application for Media Literacy Education

   Publication: Proceedings of the 36th Annual Conference of the Japan Society of Image Arts and Science, p37, May, 2010.

   (Related to Chapter 4)

2. **Authors:** Linjuan MIAO, Masakatsu KANEKO

   Title: Development of a Media Literacy E-learning Program with Video Editing Simulator

   Publication: Proceedings of the 11th Annual Conference of the Japan e-Learning Association, pp68-72, December, 2011.

   （２０１１年度日本 e-Learning 学会学術講演会の奨励賞）

   (Related to Chapter 4, 5)

<p style="text-align: center">RESUME</p>

Education Background

University of Science and Technology of China (USTC)   2003.09~2008.07

Bachelor of Communications, Department of Science and Technology of Communication and Policy

Bachelor of Business Administration, Department of Business Administration

University of Electro-Communications, Japan (UEC)

International Exchange Program	2006.04~2007.03
Master of Engineering, Department of Human Communications	2008.10~2010.09
Ph.D. Candidate, Department of Informatics	2010.10~2015.12

Work Experience

None

Appendix 1

Tables and PHP Codes

Tables in the Database Server

There are ten tables in the database, one is login table for recording students' login information, one is lesson table for providing teaching materials, the rest eight tables are chapter tables for receiving students' answers of each lesson.

Login table includes field of loginID, user, pass, and date to record students' login id, username, password, and the date. Properties of these fields are as Table 1. Specific example of login table is as Table 2.

Table 1: Login Table Structure

Field	Type	Collation	Attributes	Null	Default	Extra
loginID	int(4)			No	None	auto_increment
user	text	utf8_general_ci		No	None	
pass	text	utf8_general_ci		No	None	
date	datetime			No	None	

Table 2: Login Table

			loginID	user	pass	date
☐	✎	✗	1	student18	kaneko18	2011-05-23 15:02:56
☐	✎	✗	2	student07	kaneko07	2011-05-23 15:02:58
☐	✎	✗	3	student30	kaneko30	2011-05-23 15:03:07
☐	✎	✗	4	student22	kaneko22	2011-05-23 15:03:29
☐	✎	✗	5	student75	kaneko75	2011-05-23 15:05:29
☐	✎	✗	6	student04	kaneko04	2011-05-23 15:05:38

Lesson table includes field of ID, FileName, Title, Text, Date and Chapter to provide the id, chapter number, title, contents, and the date of current section. Properties of these fields are as Table 3. Specific example of lesson table is as Table 4.

Table 3 Lesson Table Structure

Field	Type	Collation	Attributes	Null	Default	Extra
ID	int(10)			No	None	
FileName	varchar(40)	ujis_japanese_ci		No	None	
Title	varchar(40)	ujis_japanese_ci		No	None	
Text	text	ujis_japanese_ci		No	None	
Date	date			No	None	
Chapter	varchar(20)	ujis_japanese_ci		No	None	

Table 4 Lesson Table

			ID	FileName	Title	Text	Date	Chapter
☐	🖉	✕	0	Chapter0	ガイダンス	\<div style="line-height:1.5"\> \<h3 style="font-fam...	2011-01-10	1.0
☐	🖉	✕	1	Chapter1.1	イントロダクション	\<div style="line-height:1.5"\> \<h3 style="font-fam...	2011-01-03	1.1
☐	🖉	✕	3	Chapter1.3	テレビというメディア	\<table width="100%" border="0" cellspacing="15"\> ...	2011-01-10	1.3
☐	🖉	✕	2	Chapter1.2	考えてみましょう	\<p\>考えてみましょう 説明を始める前に、直感的に次の質問を考え、答えを選んで下さい。\</p\> ...	2010-11-20	1.2
☐	🖉	✕	4	Chapter1.4	産業としてのテレビ	\<h3 style="font-family:century"\>視聴率\</h3\> \<p\>しがたって...	2011-01-03	1.4
☐	🖉	✕	5	Chapter1.5	テレビのメディア特性	\<p\>テレビの物理層・情報層について理解を深めましょう。\</p\> \<p\>テレビの物理層・情報層の特...	2011-01-10	1.5
☐	🖉	✕	7	Chapter2.1	考えてみましょう	\<table width="100%" border="0" cellspacing="15"\>...	2011-01-25	2.1
☐	🖉	✕	8	Chapter2.2	映像情報の構成要素	\<table width="100%" border="0" cellspacing="15"\> ...	2011-01-10	2.2

Appendix 2

Chapter tables include field of ID, user, URL, answers, and date to record the id, student's username, current chapter number, students' answers to each questions, and the date. This program has four lessons, each lesson corresponds with two chapter tables in the database, one is for receiving answers of suggested questions, the other is for receiving answers of exercises. Taking chapter table 4_2 for example, properties of fields are as Table 5. Specific example is as Table 6.

Table 5: Chapter Table Structure

Field	Type	Collation	Attributes	Null	Default	Extra
Test4_2ID	int(10)			No	None	auto_increment
user	varchar(40)	utf8_general_ci		No	None	
URL	varchar(40)	utf8_general_ci		No	None	
answer1_1	varchar(600)	utf8_general_ci		No	None	
answer1_2	varchar(600)	utf8_general_ci		No	None	
answer1_3	varchar(600)	utf8_general_ci		No	None	
date	datetime			No	None	

Table 6: Chapter Table

	Test4_2ID	user	URL	answer1_1	answer1_2	answer1_3	date
	1	student77	4.2	卒業生のそれぞれ	卒業生の表情が映っている映像を多く使う	最初のほうで学生のスピーチ映像を入れ、卒業式での学生の表情であるということを印象付ける。	2011-05-30 05:00:22
	2	student22	4.2	卒業生が和気藹々とした雰囲気で式を迎えている。	式の様子と表情が多く映るようにする。	式を迎える卒業生の様子、式の様子、参加する卒業生の雰囲気、式を終えた卒業生の様子	2011-05-30 15:18:57
	3	student11	4.2	卒業の喜びと将来の不安を表現する	なるべく学生の心情を表すものを選ぶ	俯瞰的映像からクローズアップした映像へ	2011-05-30 15:33:01
	4	student04	4.2	電気通信大学のカワイイ卒業生たち	電気通信大学では男女比が30対1となっている。だがこの学校にはカワイイ女子学生が多勢いることを紹介し…	主観的に女の子の顔のかわいくない順に並べている。そして桜を途中ではさむことにより女性徒のかわいさを際…	2011-05-30 15:36:31
	5	student30	4.2	卒業式の映像を使い、ひとりひとりの旅立ちとはどういうことか、広い意味で考えられるような映像を作成する…	客観的な描写には厳密にはこだわらないようにする。しかしあまりに主観的すぎるのも映像としてはよくないと…	カットの順番については、映像の流れが不自然ではないようなつなぎ方をする。	2011-05-30 15:36:35
	6	student18	4.2	学生を送り出すということ	学長にスポットを当てる	学長押し	2011-05-30 15:38:06

Appendix 3

PHP Control

Contents in above tables are connected with students through PHP codes, which are responsible for receiving students' login information, reading teaching materials from database, displaying videos, and submitting students' answers into database. Index of this program is created using a HTML file. The key processing PHP codes and HTML file are as follows:

⦁ The index (taking lesson two as example)

```
<div>
<span>Lesson 2.<br> テレビと情報（フレーム）</span>
<a href="chapter2.1/lesson_video2.1.php?chapter=2.1" target="lessonFrame">2.1 考え
てみましょう</a>
<a href="chapter2.2/lesson_video2.2.php?chapter=2.2" target="lessonFrame">2.2 映像
情報の構成要素</a>
<a href="chapter2.3/lesson_video2.3.php?chapter=2.3" target="lessonFrame">2.3 カメ
ラとフレーム</a>
<a href="chapter2.4/lesson_video2.4.php?chapter=2.4" target="lessonFrame">2.4 現実
とフレーム</a>
<a href="chapter2.5/lesson_video2.5.php?chapter=2.5" target="lessonFrame">2.5 フレ
ームのさまざま</a>
<a href="chapter2.6/lesson_video2.6.php?chapter=2.6" target="_top">2.6 練習問題</a>
</div>
```

⦁ Login screen

```
<table width="1000" border="0" cellspacing="300">
<form action="login.php" method="post">
<tr><td align="left"><strong>UserName:</strong> <input type="text"
name="name"><br><br>
<strong>PassWord:</strong> <input type="password" name="pass"><br><br>   <input
type="submit" value="Login"> </td></tr>
```

```
</form>

</table>
```

• Receive login information

```php
//distinguish sending from "POST"

if ($_SERVER["REQUEST_METHOD"] == "POST") {

//receive data from the form

$name = @$_POST["name"];

$pass = @$_POST["pass"];

$now = date("Y/m/d H:i:s");

}

//identify the authenticity

$query = "SELECT userID, user, pass, date FROM user_table WHERE user = '$name';";

$result = mysql_query($query, $conn) or die("Data Extraction Error");

while ($row = @mysql_fetch_array($result, MYSQL_ASSOC)){

?>

<?php

if($pass==$row["pass"])

{

//insert login information into login table

$sql = "INSERT INTO login(loginID,user,pass,date) values('','$name','$pass','$now');" ;

$res = mysql_query($sql,$conn) or die("Data Extraction Error");

?>
```

• Connect with the server

```php
// server connection setup

$sv = "192.168.11.2";

$dbname = "Medialiteracy_TV";

$user = "miao";

$pass = "********";
```

Appendix 5

- Connect to the database

```
// connect to the database

$conn = mysql_connect($sv, $user, $pass) or die("Connection Error");

mysql_select_db($dbname) or die("Database Connection Error");
```

- Get the URL form index

```
$chapter = @$_GET["chapter"];
```

- Retrieve data from lesson table

```
// retrieve data

$sql = "SELECT id, FileName, title, text, chapter FROM lesson_table WHERE chapter
= '$chapter';";

$res = mysql_query($sql, $conn) or die("Data Extraction Error");
```

- Display the retrieved data

```
// display the retrieved data

while ($row = mysql_fetch_array($res, MYSQL_ASSOC)){

<table width="100%" border="0" cellspacing="15">

<tr>

<td width="80%" align="left" valign="top"><br>

<font size="3"><?php echo $row["text"]; ?></font> </td>

</tr>

}
```

- Receiving students' answers

lesson.php

```
<form method="POST" action="answer.php?chapter=4.2" >

//checkbox type questions

<input type="checkbox" value="学生" name="answer1"> 学生<br>
```

Appendix 6

```
//radio type questions

<input type="radio" value="100 万円以下" name="answer2"> 100 万円以下<br>

//text type questions

<textarea rows="3" cols="60" name="answer3"></textarea><br>

</form>
```

answer.php

```
//distinguish sending from "POST"

if ($_SERVER["REQUEST_METHOD"] == "POST") {

//get the URL

$chapter=@$_GET["chapter"];

//get username from cookie

$name = @$_COOKIE["name"];

//receive data from the form

$answer1 = cnv_dbstr(@$_POST["answer1"]);

$answer2 = cnv_dbstr(@$_POST["answer2"]);

$answer3 = cnv_dbstr(@$_POST["answer3"]);

if ((!empty($answer1)) || (!empty($answer2)) || (!empty($answer3))){

//add data into database

$sql = "INSERT INTO test_chapter4_2_table(user, URL, answer1_1, answer1_2,
answer1_3, date) ";

$sql .= "VALUES(";

$sql .= "'" . $name ."',";

$sql .= "'" . $chapter ."',";

$sql .= "'" . $answer1 ."',";

$sql .= "'" . $answer2 ."',";

$sql .= "'" . $answer3 ."',";

$sql .= "'" . date("Y/m/d H:i:s") ."'";

$sql .= ")";

$res = mysql_query($sql, $conn) or die("Data Addition Error");
```

Appendix 7

```
}

}
```

⬧ Read and display students' answers

```
//get username from cookie

$name = @$_COOKIE["name"];

<?php

// retrieve data

$sql = "SELECT Test4_2ID, user, URL, answer1_1, answer1_2, answer1_3, date FROM

test_chapter4_2_table WHERE user = '$name';";

$res = mysql_query($sql, $conn) or die("Data Extraction Error");

// display retrieved data

while ($row = mysql_fetch_array($res, MYSQL_ASSOC)){

?>

主 題 【   <font  color="red">  <strong>  <?php  echo  $row["answer1_1"];  ?>

</strong></font>   】 <br>

カット選択の方針 【   <font color="red"> <strong>   <?php echo $row["answer1_2"]; ?>

</strong></font>   】 <br>

カット順番の方針 【   <font color="red"> <strong>   <?php echo $row["answer1_3"]; ?>

</strong></font>   】 <br>
```

⬧ Display videos

lesson.php

```
<a  href="http://130.153.148.74/public/oyama/Medialiteracy_TV/chapter2.6/movie1.php"

onclick="nw_window(this.href);return   false;"><font   color="purple"><strong> 動 画

1</strong></font></a>
```

movie1.php

```
<object                      classid="clsid:D27CDB6E-AE6D-11cf-96B8-444553540000"

codebase="http://download.macromedia.com/pub/shockwave/cabs/flash/swflash.cab#ver
```

```
sion=6,0,29,0" width="550" height="550">

<param name="movie" value="magic.swf">

<param name="quality" value="high">

<param name="allowFullScreen" value="true" />

<embed

src="http://130.153.148.74/public/oyama/Medialiteracy_TV//chapter2.6/1/magic.swf"

allowFullScreen="true"                                                    quality="high"

pluginspage="http://www.macromedia.com/go/getflashplayer"

type="application/x-shockwave-flash" width="550" height="330"></embed>

</object>
```

• Disconnect to the database

```php
<?php

//disconnection

mysql_close($conn);

?>
```

Appendix 2

Original FLV Videos in the VES

Name	Title	Time(second)	Thumbnail
1	The hall	19	
2	Serious graduates	9	
3	Panoramic of the hall	26	
4	President's speech	18	
5	Sing the song	10	
a1	Graduates in Kimono	31	
a2	Parents	8	
a3	Talking graduates	13	
a4	Department of Human Communication	13	
a5	Camera graduates	10	
a6	Staff	10	

Appendix 10

a7	Female graduates	15	
a8	A graduate	13	
a9	The host	17	
a10	Panoramic of the hall	35	
a11	Beginning of ceremony	21	
a12	The ceremony	54	
a13	Professors	17	
a14	Graduates' speech1	17	
a15	Graduates' speech2	10	
a16	Graduates' speech3	8	
a17	Graduates' speech4	18	
a18	Carol1	11	

a19	Carol2	12	
a20	Carol3	6	
a21	Carol4	10	
a22	The ending	24	
a23	Excited graduates	15	
a24	Foreign graduates	7	
b1	Talking graduates	32	
b2	Camera graduates	22	
b3	The host	15	
b4	Panoramic of the hall	31	
b5	The ceremony1	24	
b6	The ceremony2	34	

Appendix 12

b7	President's speech1	28	
b8	President's speech2	33	
b9	President's speech3	36	
b10	Graduates' speech1	38	
b11	Graduates' speech2	13	
b12	Carol1	64	
b13	Carol2	18	
b14	Professors	32	
b15	The ending	26	
b16	Coming out from the hall	46	
b17	Outside the hall	10	
b18	Sakura1	6	

Appendix 13

b19	Sakura2	15	

The Pre- and Post- Test

メディアリテラシー　調査表

2011/05/15 & 2011/06/06

Q1　「メディアリテラシーが必要だ」という発言をよく聞きます。この場合「メディアリテラシー」とはどのようなものと<u>理解</u>されているか、<u>正しいもの</u>を選びなさい。

1)　新聞やテレビの内容に関心を持つこと
2)　インターネットや携帯電話で情報を探したり、取得したりする能力
3)　新聞やテレビのような古いメディアは偏っていると、批判する姿勢
4)　新聞・テレビ・インターネットなどを通して、情報を適切に理解し、適切に発信する能力

Q2　「メディア」について書かれた以下の記述のなかで、<u>内容がもっとも正しいもの</u>を選びなさい。

1)　「メディアに出た」「メディアが来た」と言うように、メディアとは新聞・テレビなどの記事や番組と、それをつくる人々の総称である。
2)　メディアには、新聞・テレビ・インターネットなどさまざまなものが含まれており、個々を区別して考えることはむずかしい
3)　同じニュースが新聞・テレビなど多様なメディアで伝えられるのは、内容が同じで重複しているが、沢山の読者・視聴者に届く効果を持つ。
4)　たとえば新聞というメディアを考えるためには、記事や記事の作り手だけでなく、記事によって流れる情報や、情報によって読者がどのように動くかを考慮に入れる必要がある

Q3　新聞は一つのメディアです。新聞というメディアを構成している要素を挙げてみました。<u>新聞を構成するとは言えないもの</u>を、一つ選びなさい。

1)　新聞の記事
2)　新聞をつくっている紙とインク
3)　文字
4)　新聞を保管しておく図書館

Q4 テレビと映画は両方とも映像を使ったメディアですが、さまざまな特性の違いがあります。特性についての記述で<u>間違ったもの</u>を挙げなさい。

1)　映画（35mm）はテレビ（アナログテレビ、HDTV）より画質がよいので、すぐれたメディアだ
2)　上映（放映）１回あたりの視聴者数は、映画よりテレビのほうが多い

3）映画は、上映がはじまったら途中でコンテンツを切り替えることができないが、テレビはチャンネルを変えることができるので、テレビでは視聴者を飽きさせない工夫が必要だ

4）映画は、上映フィルムの焼き増しや、映画館や配給ルートの管理運営に大きな経費がかかるので、一本あたりの制作費と収益の予算規模も大きくなる

Q5 テレビで視聴率〇〇％とよく言います。NHK の全国放送で視聴率１％は、実際の視聴者数では何人程度に相当するか、<u>近い数字</u>を答えなさい。
1）１万人
2）10 万人
3）100 万人
4）1000 万人

Q6 民間放送のもっとも重要な収入源は TVCM です。
TVCM を放映するために、CM 企業は放送局に料金を支払います。この料金は、さまざまな要素によって決まりますが、以下のうち、料金計算に<u>通常入らない要素</u>を一つあげなさい。
1）CM の長さ（放映時間長）
2）CM の放映時間帯
3）CM の出演タレント好感度
4）CM が挿入される番組の視聴率

Q7 以下の画像がフィクション動画（映画、TV ドラマ）の一部だったとします。
この動画を構成している要素を列挙するリストを作りました。<u>間違っているもの</u>を挙げなさい。

1) 人などの被写体
2) 人物への演出、指示
3) 被写体に対するカメラの距離、角度
4) 想定されているストーリー
5) 公園の地名
6) 人力車に乗っている人の赤い毛布
7) 桜の花

Q8　ある小学校のあるクラス（生徒数 30 名）の子供たちについて、生活や学業のありかたを取材して１時間のドキュメンタリー番組を作るとします。番組の作り方について、<u>妥当と思われる記述を挙げなさい。</u>

1) 30 人生徒がいるので、平等のために、一人 2 分ずつ、全員を紹介するのがよい
2) 紹介する人数は少なくてもよいので、リアリティを出すために、選んだ生徒の学校や家庭での生活を、もれなく再現するのがよい
3) すべての生徒のすべての生活を再現することは不可能であり、数人の特定の活動を紹介することが中心にならざるを得ないが、その際、紹介されなかった生徒や活動があることを忘れてはならない
4) どの生徒のどの活動を紹介するかは、番組制作者の個性が反映されるところなので、制作者がいいと思った主観を何より大切にする

Q9　次のような撮影場所で、A・B・C のような画面の枠（フレーム）でそれぞれ撮影をしたとします。以下の描写にふさわしいのは、A・B・C どのフレームの撮影でしょうか。

描写１：久しぶりに会って仲良く会話している友人たち　（　　　）
描写２：お花見の公園で、たくさんの人が思い思いに楽しんでいる　（　　　）

Appendix 17

Q10　画面と被写体の大きさの関係をショットサイズという言葉であらわします。ショットサイズには、クローズアップ、ミドルショット、ロングショットなどがあります。それぞれの画面の説明に、<u>最後の利用方法で対応するもの</u>を入れなさい。

1)　クローズアップ：被写体の胸から上が大きく写っている　　　　　　　（　　　）
2)　ミドルショット：被写体の腰、ないし膝から上が写り、中程度の大きさ（　　　）
3)　ロングショット：被写体が足先まで写り、背景も広く写っている　　　（　　　）

A:　　人物がどのような状況に置かれているか、状況全体をあらわすのに向いている
B:　　人物の表情をとらえ、感情をあらわすのに向いている
C:　人物の動きをとらえるのに向いている

Q11「今日は暑かった」というニュースをつくるために、以下のような映像素材を取材で得たとします。

A:　打ち水をする人々

B: 日差しのなかの歩行者

C: 暑さでぐったりしている子供

D: 水浴びをするこどもたち

Appendix 19

E:　電力使用量グラフ

Q11-1　「暑くて大変だった」というメッセージを持つニュースを作る場合、映像の組み合わせとして適切なものを選びなさい。

　　1）　A—E—D

　　2）　B－E－C

　　3）　E－A－C

Q11-2　「暑いが工夫してがんばろう」というメッセージを持つニュースを作る場合、映像の組み合わせとして適切なものを選びなさい

　　1）　E－B－D

　　2）　C－E－A

　　3）　E－A—D

Q12 上記設問で使った映像のうち、電力消費量をあらわす E は、「暑くて大変だった」というメッセージにも、「暑いが工夫してがんばろう」というメッセージにも使うことができます。この理由を説明した文章として適切なものを選びなさい。

　　1）　Eはそれ自体であまり多くの情報を持っていないので、どんな場合にも使うことが

できる

2) 一般に、ある映像（画像）は他のどんな映像（画像）とも組み合わせることができ、組み合わせによって、全体のメッセージが変わるから

3) この場合、他の映像（画像）との相性がよいからうまくいくが、ケースによって違うので、組み合わせが成功するかどうかは慎重に判断しなければならない

Q13 TV 番組のジャンルのなかに、リアリティ番組と呼ばれるものがあります。これは、視聴者やタレントに、ある設定をあたえ（無人島で暮らす、何人かで旅行する、など）、その設定のなかで一定時間（１週間とか）を本当に過ごしてもらい、実際の体験や感情を映像にとらえるものです。このリアリティ番組と、テレビドラマ、ドキュメンタリーなどを比較した記述として、<u>正しいもの</u>を選びなさい。

1) テレビドラマはすべて嘘（演出）だが、ドキュメンタリーとリアリティ番組は、本当にあったことを映像化しているので「真実」である。

2) リアリティ番組は、タレントが出ていたり、劇的な演出（食べ物がないところで、奇跡的に何かが見つかるとか）をしたりして信用できないが、ドキュメンタリーは、素人を演出なしで記録するので信用できる

3) テレビドラマもリアリティ番組もドキュメンタリーも、程度の違いはあっても演出や編集をしているという点で完全な「真実」というわけではない

Q14 第二次世界大戦中、日本やドイツではファシズムと呼ばれる全体主義体制が築かれ、情報が強く統制されていました。当時あったことの記述として、<u>間違っているもの</u>を挙げなさい。

1) 新聞・ラジオなどのマスメディアは、国によって検閲を受け、国の考えに反対する情報は発信を禁止された

2) 外国からの情報が入らないように工夫されたラジオが安価で売られ、爆発的に普及した

3) 映画や漫画など個人的な制作物では、自由な意見を言うことができた

4) 市民が自由に集まって集会を行うことができなかった

Q15 新聞、テレビなど影響力の強いメディアは、自分たちの活動倫理を定めていることがあります。イギリス公共放送 BBC の倫理規定（The BBC's editorial values 2010）から主な規定を書き出しました。一つだけ原典に<u>書いていない項目</u>が混じっています。それを挙げてください。

1) 真実と情報の正確さを追求すること

2) 社会のなかにある意見の多様性に配慮し、それらを公平に取り扱うこと

3) 国家の利益を尊重すること

4）視聴者が不快な思いをすることのないよう気をつけること

5）説明責任を果たすこと

以上です。お疲れ様でした。

Appendix 4

Survey Questionnaire

e ラーニング教材『Media Literacy_TV』実験

URL: http://130.153.148.74/public/oyama/Medialiteracy_TV/

※e ラーニングを始める前にお願い

- ブラウザは、**FireFox** でお願いします。（Internet Explorer だと、動画が再生されません）
- ガイダンスでも記載されておりますが、1 レッスン 50 分で構成されております。これを目安に学習して下さい。
- また、各 Lesson の開始時間、終了時間、使用時間を記載して下さい。

※e ラーニングを始めましょう

- 次の URL にアクセスしてください。

    http://130.153.148.74/public/oyama/Medialiteracy_TV/

- ログイン名、およびパスワードはこちらで指定させて頂きます。

UserName : studentxx
PassWord : kaneko**xx**

- ログイン後、次のページが出てくる、そうでない場合は、再度ログインしてください。

Media Literacy

UEC E-learning Course

Designed and created by Kaneko Lab. UEC

- 左側の各章のインデックスの順序として勉強してください。
- 各 Lesson の開始時間、終了時間、使用時間を記載して下さい。

	開始時間	終了時間	使用時間
Lesson 1			
Lesson 2			
Lesson 3			
Lesson 4			

Appendix 24

最後に、簡単なアンケートにご協力お願いします。

Q1　システムは正常に動作しましたか？

　　　　　　　　　　　　　　　　　はい　・　いいえ

Q2　Q1で「いいえ」を答えた人は、問題点を述べて下さい。

Q3　システムのインターフェイスと操作性について

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　分かりにくい　　　分かりやすい

Q4　1レッスン50分の時間について

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　短い　　　　　　　　　　　長い

Q5　この教材の学習内容の分かりやすさについて
　　（全体として）

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　分かりにくい　　　分かりやすい
　　（Lesson1)

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　分かりにくい　　　分かりやすい
　　（Lesson2)

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　分かりにくい　　　分かりやすい
　　（Lesson3)

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　分かりにくい　　　分かりやすい
　　（Lesson4)

　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5
　　　　　　　　　　　　　　分かりにくい　　　分かりやすい

Q6　この教材の学習内容の面白さについて
　　（全体として）

　　　　　　　　　　　　　　　1　・　2　・　3　・　4　・　5

つまらない　　　　　　　面白い

(Lesson1)

　　1　・　2　・　3　・　4　・　5
つまらない　　　　　　　面白い

(Lesson2)

　　1　・　2　・　3　・　4　・　5
つまらない　　　　　　　面白い

(Lesson3)

　　1　・　2　・　3　・　4　・　5
つまらない　　　　　　　面白い

(Lesson4)

　　1　・　2　・　3　・　4　・　5
つまらない　　　　　　　面白い

Q7　この教材はメディアリテラシーの習得に
　　（全体として）

　　　　1　・　2　・　3　・　4　・　5
　　役に立たなかった　　　役に立った

(Lesson1)

　　　　1　・　2　・　3　・　4　・　5
　　役に立たなかった　　　役に立った

(Lesson2)

　　　　1　・　2　・　3　・　4　・　5
　　役に立たなかった　　　役に立った

(Lesson3)

　　　　1　・　2　・　3　・　4　・　5
　　役に立たなかった　　　役に立った

(Lesson4)

　　　　1　・　2　・　3　・　4　・　5
　　役に立たなかった　　　役に立った

Q8　この教材による学習効果は
　　（全体として）

　　　　1　・　2　・　3　・　4　・　5

ない   ある
    （Lesson1）

                    1 ・ 2 ・ 3 ・ 4 ・ 5
                    ない   ある
    （Lesson2）

                    1 ・ 2 ・ 3 ・ 4 ・ 5
                    ない   ある
    （Lesson3）

                    1 ・ 2 ・ 3 ・ 4 ・ 5
                    ない   ある
    （Lesson4）

                    1 ・ 2 ・ 3 ・ 4 ・ 5
                    ない   ある

＊最後に、この教材の文章の分かりづらさや、見栄え、気が付いたことがありましたら自由に記述して下さい。
例）〇章の動画が見づらい、など

以上です。

何かご質問、不具合等ありましたら兼子研究室（苗：zshmiaomiao@gmail.com；）までご連絡お願いします。

ご協力ありがとうございました。
※この用紙は回収致しますので、無くさないようお願いします。

Appendix 27

Appendix 5

Original Data of Daytime Course

Daytime Course_Pre-Test_Original

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9_1	Q9_2	Q10	Q11_1	Q11_2	Q12	Q13	Q14	Q15	Total
student01	10	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	160
student02	10	10	10	10	0	10	0	10	10	10	10	10	10	0	10	0	10	130
student04	10	10	0	10	0	10	0	10	10	10	10	10	10	0	10	10	10	130
student05	10	0	10	10	0	0	0	10	0	10	10	10	10	0	10	10	10	110
student06	10	0	0	10	10	0	10	10	10	10	10	10	10	0	10	10	10	130
student07	10	10	10	10	0	10	0	10	10	10	10	10	10	10	10	0	10	140
student09	10	10	10	10	0	10	0	10	10	10	10	10	10	10	10	0	10	140
student11	10	10	10	0	10	10	10	0	10	10	10	10	10	10	10	10	10	150
student14	10	0	10	10	0	10	10	10	0	10	10	10	10	0	10	0	10	120
student16	10	10	10	10	0	10	0	10	10	10	10	10	10	10	10	0	10	140
student17	10	10	10	10	10	10	10	0	10	10	0	10	10	10	10	10	10	150
student19	0	0	10	10	10	10	10	10	0	10	10	10	10	0	10	10	10	130
student22	0	0	10	10	10	0	10	10	10	10	10	10	10	0	10	10	10	130
student25	10	0	10	10	10	0	10	10	10	0	10	10	10	0	10	10	10	130
student26	10	0	10	10	10	10	10	10	0	0	10	10	10	0	10	10	10	130
student27	10	10	10	10	10	10	10	0	10	10	0	10	10	10	10	10	10	150
student29	10	10	10	10	10	10	0	10	0	0	10	10	10	10	10	10	10	140
student31	10	0	0	0	10	10	10	10	10	10	10	10	10	0	10	10	10	130
student32	10	10	0	10	10	10	0	10	10	10	10	10	10	10	0	10	10	140
student33	10	0	10	10	0	0	0	10	0	10	10	10	10	0	10	10	10	110
student34	10	0	10	10	0	10	10	10	0	10	10	10	10	0	10	0	10	120
student35	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	0	150
student36	10	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	160
student37	10	0	10	10	0	0	0	10	0	10	10	10	10	0	10	10	10	110
student39	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	0	150
student42	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	10	0	150
student78	0	10	10	0	10	10	10	10	10	10	10	10	10	10	10	10	10	150
Average	8.89	5.93	8.52	8.89	6.30	7.78	6.30	8.89	7.04	8.89	9.26	9.63	9.26	4.44	9.63	7.78	8.89	136.30

Appendix 28

Daytime Course_Post-Test_Original

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9_1	Q9_2	Q10	Q11_1	Q11_2	Q12	Q13	Q14	Q15	Total
student01	10	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	160
student02	10	0	10	10	0	10	10	0	10	10	10	10	10	10	10	10	10	140
student04	0	10	0	10	0	0	0	10	10	10	10	10	10	10	10	10	10	120
student05	10	0	10	0	0	10	10	10	10	10	10	10	10	0	10	10	0	120
student06	10	10	10	10	0	10	10	10	10	10	10	10	10	0	10	10	0	140
student07	10	10	10	10	10	10	10	10	0	10	10	10	0	10	10	10	10	160
student09	10	10	10	10	10	10	0	10	10	10	10	10	10	0	10	10	10	150
student11	10	10	0	10	0	10	10	10	10	10	10	10	10	10	10	10	10	140
student14	10	0	10	10	10	10	10	10	0	10	10	10	10	0	10	10	10	130
student16	0	0	0	10	10	10	10	10	10	10	10	10	10	0	10	10	10	140
student17	0	10	0	10	10	10	0	10	10	10	10	10	10	10	10	10	10	150
student19	0	10	10	10	0	10	10	10	10	10	10	10	10	10	10	10	10	150
student22	10	0	10	0	10	10	10	10	10	10	10	10	10	0	10	10	10	150
student25	10	0	10	10	10	10	10	10	10	10	10	0	10	0	10	10	10	140
student26	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	170
student27	10	10	10	0	10	0	10	10	10	10	10	10	10	10	10	10	10	150
student29	10	0	10	10	10	10	0	10	10	10	10	10	10	0	10	10	0	130
student31	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	160
student32	10	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	160
student33	10	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	150
student34	0	0	10	10	10	10	0	10	10	10	10	10	10	10	10	0	0	130
student35	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	160
student36	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	170
student37	10	10	0	10	10	10	10	0	0	0	0	0	0	0	0	10	10	120
student39	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	140
student42	10	10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10	150
student78	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	170
Average	8.15	7.04	8.15	8.89	7.41	9.26	8.15	8.89	8.89	9.63	9.63	9.63	8.15	6.67	9.63	9.63	8.52	146.30

Appendix 29

Daytime Course_Exercise_Original_Lesson 1.5

	Q1_1	Q1_2	Q1_3	Q2	Q3_1	Q3_2	Q3_3a	Q3_3b	Q3_3c	Q4_1	Q4_2	Q4_3	Total
student01	10	10	10	10	5	5	5	5	7.5	5	5	6	83.5
student02	10	10	10	0	5	5	5	0	0	5	5	6	61
student04	10	10	0	10	0	5	5	0	3.75	5	5	7.5	61.25
student05	10	10	0	10	5	5	0	0	0	5	5	9	59
student06	10	10	10	10	0	5	0	5	3.75	2.5	0	4.5	60.75
student07	10	10	0	0	5	5	0	5	7.5	5	5	13.5	66
student09	10	0	0	0	5	5	5	0	7.5	2.5	5	6	46
student11	10	10	10	0	5	5	5	0	11.25	5	5	1.5	67.75
student14	10	10	10	0	5	5	0	0	0	5	5	9	59
student16	10	10	10	0	5	5	0	0	0	5	5	7.5	57.5
student17	10	10	10	0	5	5	5	5	7.5	5	5	13.5	81
student19	10	10	10	10	5	5	5	0	7.5	5	5	4.5	77
student22	0	0	10	0	5	5	5	5	0	5	0	1.5	36.5
student25	10	10	10	10	5	5	5	5	15	5	5	12	97
student26	10	10	0	0	5	5	0	5	7.5	5	5	3	55.5
student27	10	10	10	0	5	5	5	0	7.5	5	5	6	68.5
student29	10	10	0	10	5	5	0	0	0	5	5	15	65
student31	10	10	0	10	0	5	5	0	7.5	2.5	5	3	68
student32	10	10	10	10	0	5	0	5	15	5	5	15	95
student33	10	10	0	10	5	5	0	0	0	5	5	6	56
student34	10	10	0	0	5	5	0	0	0	5	5	12	47
student35	10	10	0	0	0	5	5	0	7.5	5	5	7.5	60
student36	10	10	10	10	5	5	5	5	15	5	5	9	94
student37	10	10	10	10	5	0	0	0	0	2.5	2.5	10.5	60.5
student39	10	10	10	0	5	5	0	0	0	5	5	6	56
student42	10	10	10	10	5	5	5	0	15	2.5	5	10.5	93
student78	10	10	0	10	5	5	5	5	3.75	5	5	7.5	71.25
Average	9.63	9.26	6.30	5.19	4.07	4.81	2.96	2.04	5.56	4.54	4.54	7.89	66.78

Appendix 30

Daytime Course_Exercise_Original _Lesson 2.6								
	Q1	Q2_1a	Q2_1b	Q2_2a	Q2_2b	Q3_1	Q3_2	Total
student01	10	5	5	5	5	6.67	10.00	46.67
student02	0	5	5	0	0	6.67	6.67	23.33
student04	0	5	5	0	5	6.67	6.67	28.33
student05	0	5	5	0	0	6.67	6.67	23.33
student06	0	5	5	5	5	6.67	6.67	33.33
student07	10	5	5	0	5	6.67	0.00	31.67
student09	0	5	5	5	5	0.00	10.00	30.00
student11	0	5	5	0	5	10.00	6.67	31.67
student14	10	5	5	5	5	6.67	6.67	43.33
student16	10	5	5	5	5	10.00	6.67	46.67
student17	0	5	5	0	5	10.00	6.67	31.67
student19	10	5	5	5	5	0.00	0.00	30.00
student22	0	5	5	0	5	6.67	6.67	28.33
student25	0	5	5	0	5	6.67	0.00	21.67
student26	0	5	5	5	5	6.67	3.33	30.00
student27	0	5	5	5	5	6.67	6.67	33.33
student29	0	5	5	0	5	3.33	10.00	28.33
student31	0	5	5	0	5	10.00	10.00	35.00
student32	0	5	5	5	5	10.00	10.00	40.00
student33	10	5	5	5	5	0.00	0.00	30.00
student34	0	5	5	0	5	0.00	0.00	15.00
student35	0	5	5	0	5	0.00	0.00	15.00
student36	10	5	5	5	5	6.67	0.00	36.67
student37	0	5	5	0	0	0.00	3.33	13.33
student39	10	5	5	0	5	0.00	0.00	25.00
student42	0	5	5	5	5	0.00	0.00	20.00
student78	10	0	0	5	0	10.00	6.67	31.67
Average	3.33	4.81	4.81	2.41	4.26	5.31	4.81	29.75

Appendix 31

Daytime Course_Exercise_Original _Lesson 3.5										
	Q1_1	Q2_1	Q2_1&Q2_2	Q2_2	Q3_1	Q3_2	Q3_3	Q3_4	Q3_5	Q4	Total
student01	10	10	10	10	4	4	4	4	4	0	60
student02	0	10	5	10	4	4	4	4	4	0	45
student04	10	10	10	10	4	4	4	4	4	0	60
student05	10	5	5	5	4	4	4	0	0	0	37
student06	0	5	5	10	4	4	4	4	4	10	50
student07	10	10	10	10	4	4	4	4	4	0	60
student09	10	10	5	5	4	4	4	4	4	0	50
student11	10	0	0	5	4	4	0	0	0	0	23
student14	0	10	10	10	4	4	4	4	4	0	50
student16	10	5	5	0	4	4	4	4	4	0	40
student17	10	10	10	10	4	4	4	4	4	0	60
student19	10	10	10	5	4	4	0	4	0	0	47
student22	0	10	0	0	4	4	0	4	4	0	26
student25	10	0	0	0	4	4	4	4	4	0	30
student26	0	5	5	10	4	4	0	4	4	0	36
student27	10	10	5	5	4	4	4	4	4	10	60
student29	0	10	0	0	4	4	4	4	4	0	30
student31	0	5	5	10	4	4	0	4	4	0	36
student32	10	10	5	10	4	4	4	4	4	10	65
student33	10	10	5	5	4	0	0	4	4	0	42
student34	10	0	0	5	4	4	0	4	0	0	27
student35	0	0	5	5	4	4	0	4	0	0	22
student36	0	5	0	0	4	4	0	4	4	10	31
student37	10	10	5	5	4	4	0	4	0	0	42
student39	10	10	10	5	4	4	0	4	0	0	47
student42	10	5	5	5	4	4	4	4	4	10	55
student78	10	10	5	5	4	4	4	4	4	0	50
Average	6.67	7.22	5.19	5.93	4.00	3.85	2.37	3.70	2.96	1.85	43.74

Appendix 32

Daytime Course_Practice_Original					
	Q1_1	Q1_2	Q1_3	4.4_Q1	Total
student01	30	30	30	20	110
student02	10	20	10	20	60
student04	10	10	10	10	40
student05	20	20	20	20	80
student06	20	20	20	20	80
student07	15	15	20	25	75
student09	10	10	15	15	50
student11	15	10	10	15	50
student14	20	20	20	20	80
student16	10	20	15	15	60
student17	10	15	15	15	55
student19	15	30	30	30	105
student22	20	20	15	20	75
student26	15	15	20	15	65
student27	20	15	15	10	60
student28	15	15	15	15	60
student30	15	10	10	15	50
student31	20	15	15	15	65
student32	20	15	15	20	70
student33	20	20	20	25	85
student34	15	15	15	10	55
student35	15	15	10	20	60
student36	25	25	20	30	100
student37	15	20	20	20	75
student39	15	15	10	25	65
student42	20	20	15	15	70
student78	15	10	15	15	55
Average	16.67	17.22	16.48	18.33	68.704

Appendix 33

Daytime Course_Questionnaire_Original

ID	time (L1)	L2	L3	L4	Q1	Q3	Q4	Q5 overall	Q5 L1	Q5 L2	Q5 L3	Q5 L4	Q6 overall	Q6 L1	Q6 L2	Q6 L3	Q6 L4	Q7 overall	Q7 L1	Q7 L2	Q7 L3	Q7 L4	Q8 overall	Q8 L1	Q8 L2	Q8 L3	Q8 L4
0716006	17	27	30	36	1	2	3	3	5	5	2	3	3	4	4	2	5	4	5	5	3	3	4	5	4	3	3
0916001	48	45	65	68	2	2	3	3	3	4	4	3	4	3	4	3	3	4	3	4	4	4	4	4	4	5	5
0916003	22	24	25	35	1	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
0916005	50	40	30	45	1	2	3	4	4	3	4	2	3	2	2	2	2	4	3	4	2	2	2	2	2	2	2
0916006	26	25	32	45	1	3	5	4	4	4	4	5	5	4	5	5	5	5	4	5	5	5	3	4	4	5	4
0916007	30	33	33	60	3	2	3	3	3	3	3	3	3	3	3	3	3	4	3	3	4	4	3	3	4	4	4
0916009	42	30	20	55	2	2	3	2	4	3	5	4	2	2	2	2	2	5	3	3	4	4	5	5	5	5	5
0916010	25	25	40	60	1	2	3	3	3	3	2	2	4	3	4	4	4	4	3	3	4	4	3	3	3	4	5
0916011	40	40	50	50	1	3	3	3	3	3	3	2	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5
0916012	25	18	24	47	2	1	2	4	4	3	2	3	4	4	4	4	4	4	3	3	3	3	3	3	3	3	4
0916013	45	35	45	70	1	5	5	5	5	5	5	5	2	2	2	2	2	4	3	4	5	4	2	2	2	2	2
0916014	70	65	80		1	4	4	4	4	4	4	5	4	4	4	4	4	4	3	4	4	4	5	5	5	5	5
0916015	26	19	35	50	1	3	3	4	5	5	5	5	2	2	2	2	5	5	5	5	5	5	5	5	5	5	5
0916017	48	32	65	64	2	1	2	2	2	2	2	2	2	2	2	2	2	4	3	3	4	4	3	3	3	3	3
0916018	27	33	43	57	1	3	4	4	4	3	3	3	4	4	4	4	4	4	3	4	4	4	4	3	4	4	5
0916019	50	30	50	50	1	4	3	4	4	4	3	3	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4
0916021	50	60	50	50	2	2	2	4	4	3	3	5	4	4	4	4	5	4	3	4	4	5	5	5	5	5	5
0916024	50	52	63	81	1	1	2	3	3	3	3	3	3	3	3	3	3	5	5	5	5	5	4	4	4	4	4
0916026	28	20	37	43	2	3	3	3	4	3	3	3	2	2	2	2	2	4	4	4	4	4	3	3	3	3	4
0916027	28	34	30	55	1	4	3	4	4	3	3	3	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
0916029	20	19	30	15	1	5	4	5	5	5	5	5	2	2	2	2	2	5	5	5	5	5	2	2	2	2	2
0916030																											
0916031	50	46	54	43	2	4	3	4	5	4	5	5	4	5	5	4	5	5	5	4	4	4	5	5	4	5	5
0916032	39	51	40	60	1	3	4	4	4	4	4	3	3	3	3	3	3	4	4	4	4	5	4	5	4	4	5
0916033	35	27	34	25	1	3	3	3	3	3	3	3	3	2	3	2	3	4	3	3	4	4	3	3	3	4	4
0916034	35	40	40	50	1	2	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4
0916035	50	46	32	61	2	5	4	4	3	4	4	5	4	4	4	4	5	5	5	5	5	5	5	5	5	5	4
0916036	28	24	45	50	1	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4
0916037	34	29	40	54	2	4	4	4	3	4	3	3	4	2	3	4	4	4	4	4	4	5	4	3	4	4	4
0916038	33	32	27	40	1	3	3	3	3	3	3	3	3	3	3	3	3	5	5	5	5	5	4	4	4	4	4
0916039	40	46	46	50	1	3	2	3	2	3	3	4	3	2	2	3	5	4	4	4	4	4	3	4	4	4	4
0916040	33	45	63	60	1	4	2	4	5	4	4	4	4	3	3	4	4	4	3	4	4	4	3	4	4	4	4
0916041	33	35	31	53	2	5	4	4	5	4	4	4	4	4	5	4	4	5	5	5	4	4	4	4	4	4	5
0916045	32	24	20	54	2	4	3	4	4	4	3	4	4	4	4	3	4	5	3	3	4	4	4	4	4	4	4
0916046	35	25	30	60	2	2	2	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
0916047	35	55	40	40	2	1	5	4	4	5	5	4	4	3	4	5	4	5	4	5	5	4	4	4	5	5	5

Appendix 34

Daytime Course_Pre-Test_Structural									
	1a	1b	1c	2a	2b	2c	3a	3b	3c	Total
student01	10	20	20	20	30	10	10	20	20	160
student02	10	10	10	20	30	0	10	20	20	130
student04	10	0	20	10	30	10	10	20	20	130
student05	10	10	10	10	30	10	10	20	0	110
student06	10	20	10	10	20	10	10	30	10	130
student07	10	10	20	20	20	10	5	25	20	140
student09	10	20	20	0	30	10	10	20	20	140
student11	10	20	20	10	30	10	10	30	10	150
student14	10	20	10	20	10	10	10	10	20	120
student16	10	20	20	0	30	10	10	20	20	140
student17	10	10	10	20	30	10	10	30	20	150
student19	0	10	20	10	20	10	10	30	20	130
student22	10	10	10	0	30	10	10	30	20	130
student25	0	20	20	20	30	0	10	20	10	130
student26	10	10	10	20	10	10	10	30	20	130
student27	10	20	10	20	30	10	10	20	20	150
student29	10	20	10	10	30	10	10	20	20	140
student31	10	0	20	20	20	10	10	20	20	130
student32	0	10	20	20	20	10	10	30	20	140
student33	10	10	10	10	20	10	10	20	10	110
student34	10	0	20	20	20	10	5	15	20	120
student35	10	20	10	10	30	10	10	30	20	150
student36	10	20	20	20	20	10	10	30	20	160
student37	10	10	0	20	20	0	10	30	10	110
student39	10	20	20	20	30	10	10	20	10	150
student42	10	20	10	20	30	10	10	30	10	150
student78	10	20	20	20	30	10	5	15	20	150
Average	8.89	14.07	14.81	14.81	25.19	8.89	9.44	23.52	16.67	136.30

Appendix 35

	1a	1b	1c	2a	2b	2c	3a	3b	3c	Total
				Daytime Course_Post-Test_Structural						
student01	10	20	20	20	30	10	10	20	20	160
student02	10	10	10	20	30	0	10	30	20	140
student04	0	0	20	0	30	10	10	30	20	120
student05	10	10	0	20	30	10	10	20	10	120
student06	10	10	20	20	20	10	10	30	10	140
student07	10	20	20	20	30	10	5	25	20	160
student09	10	20	20	10	30	10	10	20	20	150
student11	10	10	20	0	30	10	10	30	20	140
student14	10	20	10	20	10	10	10	20	20	130
student16	0	20	10	10	30	10	10	30	20	140
student17	0	20	20	10	30	10	10	30	20	150
student19	0	10	20	20	30	10	10	30	20	150
student22	10	20	0	20	30	10	10	30	20	150
student25	10	20	10	20	30	10	5	15	20	140
student26	10	20	20	20	30	10	10	30	20	170
student27	10	10	10	20	30	10	10	30	20	150
student29	10	20	10	10	30	10	10	20	10	130
student31	10	20	20	20	30	10	5	25	20	160
student32	10	20	20	20	30	10	10	20	20	160
student33	10	10	20	20	30	10	10	20	20	150
student34	0	20	10	10	30	10	10	30	10	130
student35	10	20	20	20	30	10	10	30	10	160
student36	10	20	20	20	30	10	10	30	20	170
student37	10	20	20	10	20	0	5	15	20	120
student39	10	20	20	20	30	10	0	10	20	140
student42	10	20	20	20	20	0	10	30	20	150
student78	10	20	20	20	30	10	10	30	20	170
Average	8.15	16.67	15.93	16.30	28.15	8.89	8.89	25.19	18.15	146.30

Appendix 36

	1a	1b	1c	2a	2b	2c	3a	3b	3c	Total
				Daytime Course_Exercise_Structural						
student01	30	10	43.5	20	10	16.67	10	50	0	190.17
student02	30	0	31	10	0	13.33	0	45	0	129.33
student04	20	10	31.25	15	0	13.33	10	50	0	149.58
student05	20	10	29	10	0	13.33	10	27	0	119.33
student06	30	10	20.75	20	0	13.33	0	40	10	144.08
student07	20	0	46	15	10	6.67	10	50	0	157.67
student09	10	0	36	20	0	10.00	10	40	0	126.00
student11	30	0	37.75	15	0	16.67	10	13	0	122.42
student14	30	0	29	20	10	13.33	0	50	0	152.33
student16	30	0	27.5	20	10	16.67	10	30	0	144.17
student17	30	0	51	15	0	16.67	10	50	0	172.67
student19	30	10	37	20	10	0.00	10	37	0	154.00
student22	10	0	26.5	15	0	13.33	0	26	0	90.83
student25	30	10	57	15	0	6.67	10	20	0	148.67
student26	20	0	35.5	20	0	10.00	0	36	0	121.50
student27	30	0	38.5	20	0	13.33	10	40	10	161.83
student29	20	10	35	15	0	13.33	0	30	0	123.33
student31	30	10	28	15	0	20.00	0	36	0	139.00
student32	30	10	55	20	0	20.00	10	45	10	200.00
student33	20	10	26	20	10	0.00	10	32	0	128.00
student34	20	0	27	15	0	0.00	10	17	0	89.00
student35	20	0	40	15	0	0.00	0	22	0	97.00
student36	30	10	54	20	10	6.67	0	21	10	161.67
student37	30	10	20.5	10	0	3.33	10	32	0	115.83
student39	30	0	26	15	10	0.00	10	37	0	128.00
student42	30	10	53	20	0	0.00	10	35	10	168.00
student78	20	10	41.25	5	10	16.67	10	40	0	152.92
Average	25.19	5.19	36.41	16.30	3.33	10.12	6.67	35.22	1.85	140.27

Appendix 37

Original Data of Night Course

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9_1	Q9_2	Q10	Q11_1	Q11_2	Q12	Q13	Q14	Q15	Total
							Night_Pre-Test_Original											
student45	10	0	10	10	10	10	10	10	0	0	0	10	10	10	10	10	10	130
student48	10	10	10	10	0	10	10	10	0	10	10	10	10	0	10	0	0	120
student49	10	10	10	10	0	10	10	10	0	10	10	10	10	10	10	10	10	150
student52	10	0	10	10	0	10	10	10	10	10	10	10	10	0	10	10	10	140
student53	10	10	10	10	10	10	10	10	10	0	0	10	10	0	10	10	10	140
student54	10	10	10	0	10	0	10	0	0	10	10	10	10	0	10	0	10	110
student56	10	10	10	10	10	10	10	10	10	10	0	10	10	0	10	10	10	150
student58	10	10	10	10	10	0	10	10	10	10	10	10	10	0	10	0	10	140
student60	0	10	0	10	10	10	0	10	10	10	10	10	10	0	10	10	10	130
student61	0	10	10	10	10	0	10	10	10	10	10	10	10	0	10	0	10	130
student62	0	0	0	10	0	0	0	10	10	10	10	10	10	0	10	10	10	100
student63	10	0	0	10	0	10	0	10	0	10	10	10	10	0	10	10	10	110
student65	10	10	0	10	10	10	10	10	10	10	10	10	10	10	10	0	10	150
student66	10	10	10	10	10	0	10	10	10	10	10	10	10	0	10	0	10	140
student67	10	0	10	10	10	10	10	10	10	10	10	0	0	0	10	10	10	130
student68	10	0	0	10	10	10	10	10	10	10	10	0	10	10	10	10	10	140
student74	10	10	0	10	0	10	0	10	10	10	10	10	10	0	10	10	10	130
student75	0	10	10	0	0	10	0	0	10	10	10	10	10	0	10	10	10	110
student76	0	10	10	10	0	10	0	0	10	10	10	10	10	0	10	10	10	120
Average	7.37	5.79	6.84	8.95	5.79	7.37	6.84	8.95	7.89	8.95	8.95	8.42	8.42	5.26	9.47	6.84	7.89	130.00

Night_Post-Test_Original

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9_1	Q9_2	Q10	Q11_1	Q11_2	Q12	Q13	Q14	Q15	Total
student45	0	10	10	10	10	10	10	10	10	10	10	10	10	0	10	10	10	150
student48	10	10	10	10	0	0	10	10	0	10	10	10	10	0	10	0	0	110
student49	0	10	0	10	0	10	0	10	10	10	10	10	10	10	10	10	0	130
student52	10	10	10	10	0	10	0	10	10	10	10	10	0	10	10	10	0	130
student53	10	0	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10	150
student54	10	10	10	0	10	0	10	0	10	10	10	10	10	10	10	0	10	130
student56	10	10	10	10	10	10	10	0	10	10	0	10	0	0	10	0	10	120
student58	10	10	10	10	10	0	0	10	10	10	10	10	10	0	0	10	10	130
student60	10	10	10	10	0	10	10	10	10	10	10	10	10	10	10	10	10	160
student61	10	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0	150
student62	10	10	0	10	10	0	10	10	10	10	10	10	10	10	10	10	10	150
student63	10	0	0	10	10	10	10	10	10	10	10	10	10	0	0	10	0	140
student65	10	10	0	10	10	10	10	10	10	10	10	10	10	0	10	10	10	150
student66	10	10	10	10	10	0	10	10	10	10	0	10	10	10	0	0	10	130
student67	10	0	10	10	10	10	10	0	10	10	10	10	10	10	10	10	10	150
student68	10	10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	0	150
student74	10	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	160
student75	0	10	10	0	10	10	0	10	10	10	10	10	10	0	10	10	10	130
student76	10	10	0	10	0	10	10	0	10	10	10	10	10	10	10	10	10	140
Average	8.42	7.37	7.89	8.95	7.37	7.37	8.42	7.89	9.47	10.00	7.89	10.00	8.95	6.84	8.42	7.89	6.84	140.00

Appendix 39

Night_Exercise_Original_Lesson 1.5

	Q1_1	Q1_2	Q1_3	Q2	Q3_1	Q3_2	Q3_3a	Q3_3b	Q3_3c	Q4_1	Q4_2	Q4_3	Total
student45	10	0	0	0	0	5	5	0	0	2.5	0	1.5	24
student48	10	10	0	10	5	5	0	0	7.5	5	5	1.5	59
student49	10	10	0	0	5	0	5	0	7.5	5	5	7.5	55
student52	10	10	0	0	5	0	5	0	3.75	5	5	3	46.75
student53	10	10	10	0	5	5	5	5	11.25	5	0	4.5	70.75
student54	10	10	10	0	5	5	0	0	0	5	2.5	1.5	49
student56	10	10	0	0	0	5	0	0	0	2.5	0	0	27.5
student58	10	0	0	10	5	5	0	0	0	5	5	12	52
student60	10	10	0	0	5	5	0	5	0	2.5	2.5	0	40
student61	0	0	0	10	5	5	5	0	0	5	5	3	38
student62	10	0	0	0	0	5	5	0	0	5	5	0	30
student63	0	0	0	10	5	5	0	5	0	5	5	4.5	39.5
student65	10	10	10	0	5	5	5	5	15	2.5	0	4.5	72
student66	10	10	10	10	5	5	0	0	0	5	0	3	58
student67	10	10	10	10	5	5	5	0	0	5	5	1.5	71.5
student68	10	10	10	10	5	5	5	5	7.5	5	2.5	3	78
student74	10	10	10	0	5	0	5	5	3.75	5	0	4.5	58.25
student75	10	10	10	10	5	5	5	0	7.5	5	0	4.5	72
student76	10	10	10	0	0	5	0	0	0	2.5	5	4.5	47
Average	8.95	7.37	4.74	4.21	3.95	4.21	2.89	1.84	3.36	4.34	2.76	3.39	52.01

Appendix 40

Night_Exercise_Original _Lesson 2.6								
	Q1	Q2_1a	Q2_1b	Q2_2a	Q2_2b	Q3_1	Q3_2	Total
student45	0	0	0	5	0	3.33	6.67	15
student48	0	5	5	5	5	10	10	40
student49	0	5	5	5	5	3.33	6.67	30
student52	10	5	5	5	5	3.33	3.33	36.67
student53	0	5	5	0	5	10	6.67	31.67
student54	0	5	5	5	5	10	10	40
student56	0	0	0	0	5	6.67	3.33	15
student58	0	5	5	5	5	10	6.67	36.67
student60	0	5	5	0	0	3.33	3.33	16.67
student61	0	5	5	0	5	0	0	15
student62	0	5	5	0	5	0	0	15
student63	0	5	5	0	5	0	6.67	21.67
student65	10	0	0	0	0	6.67	3.33	20
student66	0	0	0	0	5	6.67	6.67	18.33
student67	0	5	5	0	5	10	6.67	31.67
student68	10	5	5	5	5	3.33	3.33	36.67
student74	10	0	0	0	0	0	0	10
student75	0	5	5	5	5	6.67	3.33	30
student76	0	5	5	5	0	10	6.67	31.67
Average	2.11	3.68	3.68	2.37	3.68	5.44	4.91	25.88

Night_Exercise_Original _Lesson 3.5											
	Q1_1	Q2_1	Q2_1&Q2_2	Q2_2	Q3_1	Q3_2	Q3_3	Q3_4	Q3_5	Q4	Total
student45	10	0	0	0	4	4	4	4	4	0	30
student48	10	10	10	10	4	4	0	4	4	0	56
student49	10	0	0	0	4	4	4	4	4	0	30
student52	0	10	5	0	4	4	0	4	4	0	31
student53	0	10	10	5	4	4	0	4	4	0	41
student54	0	0	0	10	4	4	0	0	4	0	22
student56	10	0	0	0	0	4	4	0	4	0	22
student58	10	10	5	0	0	4	0	4	4	0	37
student60	0	10	5	10	4	4	4	4	4	0	45
student61	10	10	5	5	4	0	4	0	0	0	38
student62	0	10	5	5	4	4	0	0	4	0	32
student63	0	0	0	0	4	4	4	4	4	0	20
student65	10	10	5	5	4	4	4	4	4	0	50
student66	0	5	5	5	4	4	0	0	4	0	27
student67	10	5	5	10	4	4	4	4	4	0	50
student68	0	5	5	5	4	4	0	4	4	0	31
student74	10	0	0	0	4	4	4	4	4	0	30
student75	10	10	5	5	4	4	4	4	4	0	50
student76	0	10	5	5	4	4	4	4	4	0	40
Average	5.26	6.05	3.95	4.21	3.58	3.79	2.32	2.95	3.79	0.00	35.89

Appendix 41

Night_Practice_Original					
	Q1_1	Q1_2	Q1_3	4.4_Q1	Total
student45	15	15	10	10	50
student48	20	20	25	30	95
student49	20	20	25	20	85
student52	15	15	15	15	60
student53	15	15	15	10	55
student54	15	20	20	10	65
student56	20	20	20	20	80
student58	20	25	25	20	90
student60	15	10	10	20	55
student61	20	25	25	20	90
student62	10	10	20	15	55
student63	15	15	15	20	65
student65	20	15	15	20	70
student66	15	15	15	20	65
student67	15	15	15	15	60
student68	20	25	20	25	90
student74	20	10	0	10	40
student75	20	15	15	30	80
student76	20	20	20	20	80
Average	17.37	17.11	17.11	18.42	70.00

Appendix 42

Night_Questionnaire_Original

ID	time (unit:minute) L1	L2	L3	L4	Q1	Q3	Q4	Q5 overall	Q5 L1	Q5 L2	Q5 L3	Q5 L4	Q6 overall	Q6 L1	Q6 L2	Q6 L3	Q6 L4	Q7 overall	Q7 L1	Q7 L2	Q7 L3	Q7 L4	Q8 overall	Q8 L1	Q8 L2	Q8 L3	Q8 L4
0926033	49	60	45	40	1	4	3	3	4	4	3	4	4	2	4	3	5	4	3	4	4	3	4	3	2	4	3
0926031	50	32	35	38	1	2	3	4	3	4	3	2	4	4	4	3	3	4	4	4	3	4	5	4	4	4	3
0926030	60	60	90	75	1	3	3	3	4	4	4	3	4	4	3	4	5	4	4	4	3	4	4	4	4	3	5
0926029	30	30	30	60	1	3	3	4	5	4	4	5	4	4	2	3	3	4	4	3	4	4	4	4	3	4	4
0926028	36	29	31	45	1	3	4	3	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
0926027	20	30	30	35	1	3	4	4	4	4	4	3	4	3	3	3	3	5	4	4	4	4	4	5	5	4	4
0926025	30	25	30	50	1	4	3	4	4	4	4	4	3	3	3	3	4	4	4	4	4	4	4	5	4	5	5
0926024	20	25	25	30	1	3	3	2	2	2	2	1	4	4	4	3	5	4	4	4	4	5	4	5	5	4	4
0926021	30	30	30	45	1	3	4	4	4	4	3	4	4	4	4	4	4	4	5	5	3	3	4	4	4	4	3
0926020	30	40	30	50	1	3	3	4	5	4	4	3	4	4	4	5	5	5	3	5	5	5	4	4	4	5	5
0926019	40	39	43	37	1	2	4	4	4	4	4	3	4	4	5	4	4	4	4	4	4	4	4	4	5	4	4
0926018	19	27	15	60	1	4	2	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	5	4	4	4
0926017	60	65	50	45	1	4	3	4	4	4	4	3	4	3	4	4	4	3	3	3	3	3	4	5	4	5	5
0926016	20	25	20	30	1	4	4	4	4	4	4	2	3	3	3	2	3	4	4	4	4	4	4	4	5	4	4
0926014	27	32	20	48	1	2	3	2	3	3	2	2	5	2	2	2	3	4	3	4	4	4	4	4	4	4	4
0926013	29	50	60	40	2	4	3	4	4	4	3	2	4	4	3	3	4	4	5	4	3	5	4	3	4	4	4
0926011	25	30	30	30	1	3	4	4	4	4	3	2	3	4	3	4	4	4	4	4	5	5	4	2	5	5	5
0926010	90	50	30	90	1	4	4	4	4	4	4	4	5	3	4	4	5	4	4	4	4	4	4	5	4	4	4
0926008	34	25	35	48	1	3	4	4	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
0926006	28	32	24	44	1	3	3	4	3	3	3	2	3	3	4	3	4	4	4	4	3	3	2	4	3	4	4
0926003	40	60	55	70	1	3	3	4	3	3	4	2	5	4	3	4	3	3	3	3	3	2	4	4	3	4	4
0926002	60	58	119	62	2	2	3	3	3	4	4	5	3	4	3	4	3	4	4	5	5	5	4	4	5	5	5
0824024	20	20	20	20	1	3	3	3	4	4	4	2	3	3	4	3	2	4	4	4	4	4	4	3	4	4	3
0824020	45	30	40	50	1	3	3	3	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	3	3	3	4
0824005	20	20	19	19	1	4	5	4	4	4	4	4	5	4	4	4	5	5	5	5	5	5	4	4	3	3	5
0725010	25	21	19	67	2	1	4	4	4	1	2	4	4	3	5	2	4	3	3	3	3	3	3	5	3	3	3
0725009	39	19	30	32																							

Appendix 43

Night_Pre-Test_Structural	1a	1b	1c	2a	2b	2c	3a	3b	3c	Total
student45	10	20	10	20	0	10	10	30	20	130
student48	10	10	20	20	20	10	5	25	0	120
student49	10	10	20	20	30	10	10	30	10	150
student52	10	10	10	20	30	10	10	20	20	140
student53	10	20	20	20	10	10	10	30	10	140
student54	10	10	20	10	20	0	5	25	10	110
student56	10	20	10	20	30	10	10	30	10	150
student58	10	10	20	20	30	10	5	15	20	140
student60	0	10	20	0	30	10	10	30	20	130
student61	0	10	10	20	30	10	10	30	10	130
student62	0	10	10	0	20	10	10	30	10	100
student63	10	10	10	10	30	10	10	20	0	110
student65	10	20	20	10	30	10	10	20	20	150
student66	10	10	10	20	30	10	10	20	20	140
student67	10	20	10	20	30	10	0	10	20	130
student68	10	20	10	10	30	10	10	20	20	140
student74	10	10	20	0	30	10	10	20	20	130
student75	0	10	10	10	30	10	5	15	20	110
student76	0	10	20	10	30	0	10	20	20	120
Average	7.368	13.16	14.737	13.684	25.789	8.947	8.421	23.158	14.74	130

Night_Post-Test_Structural	1a	1b	1c	2a	2b	2c	3a	3b	3c	Total
student45	0	20	20	20	30	10	10	20	20	150
student48	10	0	20	20	20	10	10	20	0	110
student49	0	10	20	10	30	10	10	30	10	130
student52	10	10	20	10	30	10	5	25	10	130
student53	10	20	10	20	20	10	10	30	20	150
student54	10	10	10	20	30	0	10	30	10	130
student56	10	20	20	20	20	0	5	15	10	120
student58	10	10	20	10	30	10	10	10	20	130
student60	10	10	20	20	30	10	10	30	20	160
student61	10	20	10	20	30	10	10	30	10	150
student62	10	10	20	10	30	10	10	30	20	150
student63	10	20	10	20	30	10	10	20	10	140
student65	10	20	20	10	30	10	10	20	20	150
student66	10	10	20	20	20	10	10	20	10	130
student67	10	20	10	20	30	0	10	30	20	150
student68	10	20	20	20	20	10	10	30	10	150
student74	10	20	10	20	30	10	10	30	20	160
student75	0	20	10	10	30	10	10	20	20	130
student76	10	10	20	10	30	0	10	30	20	140
Average	8.421	14.737	16.316	16.316	27.368	7.895	9.474	24.74	14.74	140

Appendix 44

Night_Exercise_Structural									
	1a	1b	1c	2a	2b	2c	3a	3b	3c	Total
student45	10	0	14	5	0	10	10	20	0	69
student48	20	10	29	20	0	20	10	46	0	155
student49	20	0	35	20	0	10	10	20	0	115
student52	20	0	26.75	20	10	6.667	0	31	0	114.42
student53	30	0	40.75	15	0	16.67	0	41	0	143.42
student54	30	0	19	20	0	20	0	22	0	111
student56	20	0	7.5	5	0	10	10	12	0	64.5
student58	10	10	32	20	0	16.67	10	27	0	125.67
student60	20	0	20	10	0	6.667	0	45	0	101.67
student61	0	10	28	15	0	0	10	28	0	91
student62	10	0	20	15	0	0	0	32	0	77
student63	0	10	29.5	15	0	6.667	0	20	0	81.167
student65	30	0	42	0	10	10	10	40	0	142
student66	30	10	18	5	0	13.33	0	27	0	103.33
student67	30	10	31.5	15	0	16.67	10	40	0	153.17
student68	30	10	38	20	10	6.667	0	31	0	145.67
student74	30	0	28.25	0	10	0	10	20	0	98.25
student75	30	10	32	20	0	10	10	40	0	152
student76	30	0	17	15	0	16.67	0	40	0	118.67
Average	21.053	4.211	26.75	13.421	2.105	10.35	5.2632	30.632	0	113.79

Appendix 45