

MULTIMEDIA DEVELOPMENT ON SPORTS HEALTH SUBJECT FOR THIRD SEMESTER STUDENTS OF PENJASKES FKIP UNSRI

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Abstract

The purpose of the research is to develop the results of software learning in the form of *Compact disc* (CD) for sports health effort lectures. Interactive CD is expected to be used to handle learning limitation adversity and to help students understanding the subject and improving appreciation, motivation, and independence. This study is a developmental research. The method used in this study is descriptive procedural where product development follows the procedures to produce a product. There are three basic steps that must be taken by the lecturer of the sports health subject; issue conceptualization, product making, and product trials. The study population is third semester students in physical education and health (Penjaskes) major that take the Sports Health course, Indralaya class. The method used in this research is statistics descriptive in analyzing the final result data. This research is to produce CD that can be used for teaching and learning in Penjaskes FKIP Unsri. The products which developed in CD are (1) teens' RH, (2) environmental health, (3) healthy life style and the effect of smoking, drinking, and drug abuse, (4) healthy eating behavior and balanced menu concept.

Key Words: Multimedia Development, Sports Health Subject

1. Introduction

The advances in science and technology that grows very rapidly and globally these days are forcing the higher education to improve the quality of education and learning continuously to produce high quality graduates. The college is asked to always be responsive to changes that occur in all life aspects. As the *agent of changes*, universities must always be ready for changes in terms of organization, management and content substance of academic programs. The quality of learning that is implemented in college is very influential on the

result of their education quality. The quality of education can be reached if the learning process organized smoothly, directed, and correspond to the learning objectives.

Quality learning should produce useful and aimed competencies through the proper procedures, so that it needs systematic and synergic connections between the various factors such as the professors, students, materials, media, facilities, and learning systems into one in a learning process. Lecturers that are able to facilitate the learning process, relevant with the curriculum, teaching materials that provide various stimulus and pleasant, exciting, challenging, and meaningful environment are needed to achieve high quality learning. High quality learning strongly supports the achievement of expected competencies.

Lecturers as the implementer of curriculum and various learning activities are required to be prepared for changes. Access to the cutting-edge materials, insights and learning skill is needed to make the learning process becomes conducive. In addition, the motivation and learning readiness of students need to be improved considering the lack of learning time, the very broad material scope, the very fast acceleration rate in the fields of science, technology and art, the limitation of learning media type and amount, and the lack ability to use the media. This can make a classroom atmosphere unable to motivate student to do the learning activities. According to the Ministry of Education (2005: 3), the learning process issues in college include the following; 1) There are still lecturers who do not master the material, 2) Lecturers limitation in accessing new information, 3) Lecturers cannot convey the material using media optimally, 4) Students are still not given the space to think creatively.

Sports health subject is one of the subjects held in Penjaskes UNSRI. The credit of this lecture is 2 credits consisting of theory and practice for each credit, which is carried out in third semester. This course provides an understanding of science that includes the philosophy of sports science, the notion of healthy living, teens' RH, environmental health, healthy lifestyle and

effects from smoking, drinking, and drug abuse, healthy eating behavior and balanced menu concept.

The learning process of Sports Health subject in Penjaskes during this time still has many shortcomings and needs to be addressed. The lecturers are the only source of information, so that the students are less active and creative, and learning methods used are still relatively monotonous and lack utilizing the learning media provided. The learning process that occurs is not motivating, interesting, fun, and meaningless for the students. These circumstances make the competence of the lecture less achieved.

From the phenomenon above, the ability of the lecturers still needs to be improved, especially if associated with the task of a lecturer in the current globalization era. Utilizing the advances in information and communication technology (*ICT*), especially computer technology in the learning activities are expected to solve learning problems encountered. The selection of appropriate media can help conveying the message properly, effectively, efficiently, creating and enriching the learning experience, presenting a picture of an event as close or as real as possible, and increasing the activities and skills of the students. From the description above, the researchers are interested in developing learning media through model research and development in the learning process of Sports Health subject. This research and development is expected to produce a media in the form of learning CD for an effective learning process of Sports Health subject. This multimedia is expected to assist the student in the learning process to achieve the competence. The students can use these learning CD using a computer available in the faculty computer laboratory or in their home.

2. Theoretical Background

Sports Health Subject Description

This subject is compulsory subjects given in the third semester, amounting to 2 credits, which consist of theory and practice for each credit. This course provides an understanding of science that includes the philosophy of sports science, the notion of healthy living, teens' RH, environmental health, healthy lifestyle and effects from smoking, drinking, and drug abuse, healthy eating behavior and balanced menu concept. After completing this course, students are expected to be able to teach sports health and become a role model for the people in his neighborhood in the habit of healthy ways of living. The students activities during the lecture are following the presentation of the material through lectures, assignments, discussions, questions and answers, and practices.

Learning Theory that Underlying the Learning Multimedia

An understanding of the underlying theory of learning multimedia is a very important thing to have. The learning theory is utilized to systematize the findings, predict, create hypotheses, and give explanations that required. According to Bower (2006: V), there are hundreds of learning theories viewed from various new perspectives, ideas, phenomena, experiments and investigations directly with a variety of methods. Learning is closely related to the changes of behavior, whereas the study of the changes of behavior is the learning psychology. Learning psychology laid the foundations of the birth of learning theory, the theory that attempts to explain why there is a change of behavior on an individual.

Heinich, et al (2006: 15-18) states that learning psychology that underlies the use of media and technology in learning can be viewed from four perspectives: *behaviorist perspective, cognitivist perspective, constructivist prespective, and social psychological perspective*. *Behaviorist perspective* indicates learning as

changes in behavior as a result of the interaction between the stimulus and response. *Cognitivist perspective* looks at the results of learning not only involves the stimulus and response, but also concerned with the learning process of the learning outcomes. *Constructivist perspective* is a learning theory that emphasizes the student experience, not only the cognitive knowledge, whereas *Sociological perspective* is the theory of socio-psychological study that are considered to be a mediator for the cognitivist and behaviorist theory. In addition of the learning theories that underlying the learning multimedia, there is still a highly influential learning theory. The theory is Cybernetic Learning Theory. This theory developed in line with the technology and information developments. Cybernetic sees that learning process is important, but more importantly is the information system processed that the students will learn. The information from messages or materials will determine the process.

Multimedia Concept

Heinich (2006) defines multimedia as a combination of two or more media formats that integrate to produce the information programs or educational programs. Robin and Linda in Suyanto (2005: 21) state that multimedia is a tool that can create dynamic and interactive presentations that combine texts, graphics, animations, audios, and video images.

Multimedia can be used as a communication system. It is being a system because it is a group of objects that relate and work together to produce a desired result. According Gayestik in Sunaryo (2005: 2), multimedia is an interactive computer-based communication system that capable of creating, storing, serving, and implementing video or animation. With computer technology it is now possible to store, manage and restate the source of sounds and videos in a digital format. In addition, students can also control the delivery of elements of diverse media.

Media Role in Learning

Media learning is often defined as something that can bring information and knowledge in the ongoing interaction between lecturers and students. Media acts as the intermediaries in charge of helping convey the message of learning. Learning occurs inside a process of communication between lecturers, students and teaching materials. In this situation, the media is needed to smoothen the process of communication in learning. The media usage is indispensable in the learning process at the college. The media usage is a creative and systematic efforts of a lecturer to create learning experiences for students. Sudarsono (2004: 6) states that the primary roles of the media in education are; 1.providing a concrete experience to students, 2.serving as a tool of communication and interaction between the students and the media, and the learning is an important source of learning. The benefits of media usage in learning stated by Kemp (1985: 3) that there are some research results that show positive impacts on the media usage including: the delivery of the lessons become more standardized, learning more interesting, interactive and efficient, the quality of learning could be improved, learning can be given anytime, anywhere, developed a positive attitude and the teachers' role can be changed more positively.

Multimedia in Learning

Computer is a media that has the potential to improve the effectiveness of the learning programs. Learning with computer multimedia provides packaging materials that are translated by using the computer as a learning tool. Moreover, the computer also has the ability to store, manipulate the information as needed, even capable of displaying various forms of media in it. Advancements in computer technology at this moment actually could be used in learning. Learning with utilizing multimedia has been believed gaining a lot of benefit. Learning that involves multimedia gives a chance to students to achieve more because students are given more opportunity to deal directly with

a computer. Computer multimedia presentation can be used as an effective technology media for relevant learning and teaching materials. Computer assisted learning program is a good multimedia learning programs that allow intensive interaction between the learning and computers. Multimedia has many advantages such as able to change the nature of static reading into dynamic reading activities with the new dimension member in words. Multimedia can be a trigger that can be used to expand the scope of the text. Multimedia is not only providing more texts but also able turning the texts with sounds, images, musics, animations, and videos. With an attractive presentation, multimedia is expected to make a fun learning that allows the repeat of the learning process.

The Principles of Learning Multimedia

There are four important multimedia components according to M. Suyanto (2005: 21). The first one is the computers to coordinate what is seen and heard to interact, if there is no computer then it is not a multimedia but a mix media. The second one is multimedia must provide *links* that connect people with the information and if there is no *link* then it is called a bookshelf, not a multimedia. The third one is there should be a navigation tool that guides us to browse the interconnected information networks, if there is no navigation then it is called a film, not a multimedia. The fourth one is multimedia provides a space to gather, process, and communicate information and ideas of its own, if there is no space then it is called a television not a multimedia.

Allesi in Sunaryo (2005: 2) reveals that a good learning computer program should include four activities; 1) Informations / messages (the lecture materials) must be presented in a matrix, 2) Students should be directed, 3) Students are given exercises, and 4) The achievement of student learning outcomes should be assessed. The fourth aspects are the basis for the development of learning multimedia program, besides in the program should be started with a preliminary explanation of the objectives that want to be

achieved, the clear using instructions, and if it necessary, the examples or demonstrations as well as the next tasks.

3. Method

DEVELOPMENT METHOD

Development procedure according to Borg & Gall (2003) research and development are processes used to develop or validate the products which are used in education and learning. Development procedure is done for designing, making and evaluating (validation) this research, using steps which is adapted by the Borg and Gall (1983). The steps are:

- a. Determining subjects
- b. Doing requirements indentifying
- c. Specifying materials
- d. Developing learning design that includes: 1) Determine the purpose of learning which is the standard of competence 2) Conduct learning analysis 3) Identify the behaviors and characteristics of students 4) Formulate the basic competencies 5) Develop learning materials 6) Develop test items 7) Develop learning strategies 8) Establish an evaluation / assessment
- e. Developing learning multimedia software includes: 1) Making *a flow chart view* and scriptwriting 2) Collecting materials 3) Product making process
- f. Product evaluation, which is intended to obtain data in order to revise the product. This stage involves: 1) Material experts 2) Media experts 3) Students for trial
- g. The final result in the form of Sports Health subject learning CD

Research Subject

Trial subjects or respondents involved in this research are 40 Penjaskes UNSRI third semester students who took the Sports Health subject. Instruments obtained through testing are classified into two, quantitative and qualitative data. Qualitative data in the form of criticism and suggestions are stated by media experts, material experts, and students that gathered and elaborated to improve this learning multimedia product. Quantitative data analysis in this research is using descriptive statistical analysis, in the form of very less, less, enough, good, very well questions, converted into quantitative data with the scale of 5 by scoring from 1 to 5. The steps in the data analysis are: 1) collecting raw data, 2) scoring, 3) converting the score obtained into a value with scale of 5 by using a conversion reference.

4. Result and Discussion

Validation Results and Product Testing

In the process of developing learning multimedia products, products that were developed need to go through a validation process and testing. The validation process in this study consisted of media validation with media experts and material validation by material experts. The trial process was then performed on the students with the same characteristics as the potential users. This process was done so that the products developed feasible for lectures.

Validation Product Results Data by Material Expert

Validation of the learning multimedia material products in each product carried out in accordance with the expertise of the substantive material of developed learning CD. This was done in order to obtain accurate feedbacks based on each expertise, because these inputs will be used to revise the learning CD material prior to the trial. The validator for the development of sports health

learning materials was Dr. Iyakrus M.Kes while the validator for the development of teaching media was Dr. Meirizal Usra, M.Kes.

Product validation of Learning Materials Quality Aspects

The validation of the learning materials quality aspects consist of 11 items. The results of the validation by the material experts of learning materials quality aspect can be seen in Table 1 below.

Table 1. Assessment of Learning Materials Quality Aspects by the Material Experts

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Clarity of standard formula and basic competencies	4	B	5	SB	4	B	5	SB
2	Basic competencies suitability and competency standards	4	B	5	SB	4	B	5	SB
3	Clarity of learning instructions	5	SB	4	B	5	SB	4	B
4	Accuracy of the material selections that were made into media	4	B	4	B	5	SB	5	SB
5	Accuracy of language choice in describing the material	4	B	4	B	5	SB	4	B
6	Clarity of example	4	B	4	B	4	B	4	B
7	Ease of learning menu selections	4	B	5	SB	5	SB	4	B
8	Provision of training	4	B	5	SB	4	B	5	SB
9	Ease of problem solving manuals	4	B	5	SB	5	SB	5	SB
10	Compliance with the material	4	B	5	SB	5	SB	4	B
11	Availability of key answers	5	SB	5	SB	5	SB	4	B
Amount		46		51		51		49	
Average Value		4.18		4.63		4.63		4.45	
		B		SB		SB		SB	

Information

Kri: Criteria

SB: Very Good

B: Good

CB: Pretty Good

KB: Not Good

SKB: Very Not Good

Based on Table 1, the scores on each item are included in the criteria of good and very good. While the average scores ranged from 4.18 to 4.63 after conversion to the scale of 5, the average obtained scores are generally included in the criteria of good and very good.

Product validation of Content / Material Aspect

Validation on the quality of content / learning material aspect consists of 12 items. The results of the validation by the material experts can be seen in Table 2 below

Table 2. Assessment Scores of Content / Learning Material Aspect by Material Experts

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Content / material corectness	4	B	5	SB	5	SB	5	SB
2	Material depth	4	B	5	SB	5	SB	5	SB
3	Material sufficiency for the achievement of competence	5	B	5	SB	5	SB	5	SB
4	Material / concept clarity	4	B	5	SB	4	B	5	SB
5	Material actuality	4	B	5	SB	5	SB	4	B
6	Example clarity	4	B	5	SB	4	SB	4	B
7	Animation accuracy to explain the material	3	CB	5	SB	5	SB	4	B
8	Video accuracy to explain the material	4	B	5	SB	4	SB	4	B
9	Image selection accuracy that associated with the material	5	SB	5	SB	5	SB	4	B
10	Formulation problems conformity with competence	4	B	5	SB	4	B	5	B
11	Problem formulation clarity	5	B	5	SB	5	SB	4	B
12	Problem level of difficulty		B		SB	3	CB	4	B
Amount		48		60		56		53	
Average Value		4.00		4.00		4.66		4.41	
			B		B		SB		SB

Based on Table 2, the scores on each item are included in the criteria of good and very good, whereas the average scores ranged from 4 to 4.66 and after converted to a scale of 5 the scores average value obtained is included in the criteria of good and very good

Products Validation Results Data by Media Experts

Interactive multimedia products validation was developed for each product which was made in accordance with the expertise in order to obtain accurate feedbacks based on each expertise. The media expert validator for each product was validated by Dr. Iyakrus, M.Kes.

As for the aspects that were validated by media experts on the developed

products were view and program aspect, comments and general advice, and conclusion. The results of the evaluation of media experts in the developed products and the developed multimedia products aims to make the researcher obtaining data in the form of media experts assessment to revise and improve developed products, before it is used by the user. The evaluation results by the media experts on the developed display products validated by Dr. MeirizalM.Kes.

Table 3. Display Aspect Assessment Score by Media Experts

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Background color selection accuracy	5	SB	5	SB	2	CB	4	B
2	Background writing color harmony	5	SB	5	SB	2	CB	4	B
3	Music selection accuracy	5	SB	5	SB	2	KB	2	CB
4	Animation conspicuousness	5	SB	5	SB	3	CB	4	B
5	Animation clarity	5	SB	5	SB	4	B	4	B
6	Video sound clarity	4	B	5	SB	2	KB	4	B
7	Narration clarity	4	B	5	SB	3	CB	5	SB
8	Video size	4	B	5	SB	2	CB	4	B
9	Video and material (contextual) relevance	4	B	5	SB	2	CB	5	SB
10	Button placement	5	SB	5	SB	3	B	4	B
11	Button consistency	5	SB	5	SB	2	CB	5	B
12	Button size	5	SB	5	SB	4	B	5	SB
13	Button color selection accuracy	5	SB	5	SB	5	B	5	SB
14	Text color selection accuracy	5	SB	5	SB	5	B	5	SB
15	Typeface selection accuracy	5	SB	5	SB	5	B	4	B
16	Font size accuracy	5	SB	5	SB	3	CB	5	SB
17	Image clarity	5	SB	5	SB	4	B	4	B
18	Color images clarity	4	B	5	SB	4	B	4	B
19	Iimage size accuracy	4	B	5	SB	4	B	4	B
20	Slide design display	5	SB	5	SB	4	B	5	SB
21	Each slide composition	5	SB	5	SB	2	CB	4	B
Amount		99		105		77		90	
Average Value		4.700		5.00		3.67		4.28	
			SB		SB		B		SB

Based on Table 3, the scores on each item are included in the criteria of good and very good. While the average scores ranged from 3.67 to 5. Once converted to the scale of 5, the average scores obtained generally included in the criteria of good and very good. Validation on the programming aspects was

done with the intent to get feedbacks and suggestions for the improvement of the developed products. The expert assessment results of programming aspect were done by Dr. Meirizal Usra, M.Kes.

Table 4. Assessment scores Aspects of Programming by Media Experts

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Student interactivity level with media	4	B	5	SB	3	CB	5	SB
2	Ease of interacting with media	5	SB	5	SB	4	B	5	SB
3	Usage manual clarity	5	SB	5	SB	4	B	4	B
4	Navigation structure clarity	5	SB	5	SB	3	CB	4	B
5	Ease of button usage	5	SB	5	SB	4	B	4	B
6	Animation speed	5	SB	5	SB	4	B	4	B
7	Animation settings	5	SB	5	SB	4	B	4	B
8	Feedback on students' responses	4	B	5	SB	4	B	4	B
9	Text efficiency	4	B	5	SB	3	CB	4	B
10	Slide usage efficiency	4	B	5	SB	3	CB	4	B
Amount		46		50		38		42	
Average Value		4.60		5.00		3.80		4.20	
		SB		SB		B		SB	

Based on Table 4, the scores on each item are included in the criteria of good and very good, whereas the average scores ranged from 3.80 to 5.00. After converted to the scale of 5, the average value scores obtained are generally included in the criteria of good and very good. The trial was given to 40 students by providing learning CDs to be learned and to give the questionnaire as conducted by material and media experts. In addition, observations and interviews with respondents were done to obtain inputs and comments on the products developed. The trial results of each product from the display aspect include of 10 items. The assessment results in the display aspect of the testing process can be seen in Table 5 below.

Table 5. Score Display aspect in Phase Trial

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Clearly legible handwriting	4.7	SB	4.7	SB	4.60	SB	4.2	B
2	Usage manual clarity	4.43	SB	4.2	B	4.80	SB	4.2	B
3	Ease of menu selection	4.57	SB	4.2	B	4.30	SB	4.5	SB
4	Ease of button usage	4.43	SB	4.1	B	4.30	SB	4.5	SB
5	Function buttons clarity	4.7	SB	3.8	B	4.10	B	4.4	SB
6	Music voice support	4.43	SB	4.2	B	4.10	B	4.8	SB
7	Video image clarity	3.86	B	3.9	B	3.90	B	3.0	B
8	Video sound clarity	3.57	B	4	B	3.80	B	3.9	B
9	Image color clarity	4.57	SB	4.3	SB	4.20	B	4.0	B
10	Animations attractiveness	4	B	3.5	B	4.30	SB	4.7	SB
Amount		43.26		40.90		42.20		43.20	
Average		4.326		4.09		4.24		4.32	
Value			SB		B		SB		SB

Based on Table 5, the scores on each item are included in the criteria of good and very good, whereas the average scores ranged from 4.09 to 4.32. Once converted to the scale of 5, its average scores obtained is generally included in the criteria of good and very good. The trial results of each product from the content aspect include of seven items. Results of the assessment aspect of the content / material in the test can be seen in Table 6 below

Table 6. scores Aspects of Content / Content in Phase Trial

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Material clarity	3.86	B	4.2	B	4.40	SB	4.4	SB
2	Language directness	3.86	B	4.2	B	4.50	SB	4.1	B
3	Language clarity	4	B	4.3	SB	4.40	SB	4.0	B
4	Video was clarifying the material	4.29	B	4.8	SB	4.30	SB	4.4	SB
5	Image was clarifying the material	4	B	4.9	SB	4.30	SB	4.2	B
6	Formulation of the problem clarity	4.43	SB	4.1	B	3.40	B	4.2	B
7	Problem difficulty level	4	B	3.5	B	3.50	B	3.8	B
Amount		28.44		30		28.80		29.1	
Average		4.06		4.29		4.11		4.15	
Value			B		SB		B		B

Based on Table 6, the scores on each item are included in the criteria of good

and very good, whereas the average scores ranged from 4.06 to 4.329. Once converted to a scale of 5, its average scores obtained is generally included in the criteria of good and very good. The trial results of each product from the learning aspect include of 11 items. The assessment results of the learning aspect in the test can be seen in Table 7 below.

Table 7. Learning Aspects Scores in Trial Phase

No.	Rated aspect	CD-1		CD-2		CD-3		CD-4	
		Score	Kri	Score	Kri	Score	Kri	Score	Kri
1	Easy to learn material	4.14	B	4.3	SB	4.60	SB	4.3	SB
2	Challenging / interesting material	4.14	B	4.2	B	4.70	SB	4.3	SB
3	Understanding that this material is useful in daily life	4.43	SB	4.8	SB	4.50	SB	4.7	SB
4	Ease of learning menu selection	4.14	B	4.2	B	4.70	SB	4.5	SB
5	Learning instructions clarity	3.86	B	4.2	B	4.30	SB	4.1	B
6	Problem solving manual clarity	4.43	SB	4.1	B	4.00	B	4.5	SB
7	Problem and material compliance	4.29	SB	4.2	B	4.00	B	4.6	SB
8	Feedbacks on students' answers	4	B	4	B	3.80	B	4.1	B
9	With multimedia, learning was more enjoyable	4,86	SB	4.8	SB	4.60	SB	4.9	SB
10	With multimedia, learning was more interesting	4,86	SB	4.8	SB	4.30	SB	4.9	SB
11	Multimedia help learning	4.7	SB	4.7	SB	4.80	SB	4.9	SB
Amount		47.85		49.8		48.30		48.3	
Average Value		4.35		4.52		4.39		4.39	
			SB		SB		SB		SB

Based on Table 7 it can be seen that the scores on each item included in the criteria of good and very good, whereas the average scores ranged from 4.35 to 4.52. Once converted to the scale of 5, its average scores obtained is generally included in the criteria of good and very good.

5. Conclusion and Remark

Based on the research and development of multimedia for Sports Health subject of Penjaskes FKIP UNSRI students described above, it can be concluded as follows: 1. This research and development has resulted in 4 (four) learning multimedia products in the form of Sports Health lecture material

learning CD for students of Penjaskes FKIP UNSRI. 2. From the material substance and learning aspect, as well as media aspect, the model developed decent multimedia CD can be used for lectures, because through the model trials of the respondents generally has a good and very good scores.

The suggestions by the conclusions are: 1. It needs a test of the models that have been developed to determine the level of effectiveness of the product with bigger number of respondents and 2. To support the learning process, the learning infrastructures, such as laboratory, need to be optimized.

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