
Students' Perceptions of Web-based Media Practicality on Cell Biology Course

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ABSTRACT

Cell Biology is one of the difficult subjects because of its microscopic and abstract study. It requires lecturers' ability to present concepts of cell biology concretely so that students can achieve learning outcomes. Web-based media is considered appropriate to the course. This media may provide visualization of study objects through video streaming, micrograph images, or links to relevant articles. It has been conducted a descriptive research to describe students' perceptions of web-based media practicality on Cell Biology course. The data obtained from questionnaires and unstructured interviews to students. Based on the research, it was known that students agreed the web-based media is practically used and able to streamline the learning time. Students believed that web-based media provides the motivational and cognitive function in learning. On the other hand, students argued that slow internet connections make it difficult for them to access video learning on the media. It can be concluded that students had positive perceptions of web-based media practicality.

Keywords: *web-based media practicality, Cell Biology course, students' perceptions*

Introduction

Cell Biology is one of the core courses in the structure of Competency-Based Curriculum (KBK) of Biology Education Program, Faculty of Teacher Training and Education (FKIP) of UMRAH which refers to the Indonesian National Qualification Framework (KKNI). This course is considered difficult by the students. This is showed by the low learning achievement of students for Cell Biology course. The difficulties can be caused by several factors. The main factor is the cell biology concept which is mostly abstract and microscopic. The study of cell biology discusses about structure and function of prokaryotic and

eukaryotic cells, especially macromolecules, membranes, and organelles. The object of this study is microscopic things that cannot be observed directly but requires a tool with a series of laboratory procedures.

This study of cells demands the ability of the lecturer to present the concepts of cell biology to be concrete. The design of appropriate learning environment in order to engage students to learning activities by exploring concrete information is needed. In this case, the limitations of laboratory instruments and other supporting media become one of the obstacles faced by lecturers. In addition, student factors also become obstacles to achieving the understanding of cell biology concepts, most

students lack of the learning motivation, as well as the ability of students which are not equal. All these problems then lead to the low of leaning result in the cell biology course.

As an effort to solve the problem of conceptual mastery, there needs an appropriate solution so that lecture objectives can be achieved. The paradigm shift of learning needs to be considered in this case, the lecturer acts as facilitator, mediator, and motivator, while the role of the students as the subject of learning should place them as the main actors who play an active role in lecturing process. The course should be designed according to student-centered learning principles. In relation to the Cell Biology courses, appropriate learning media is needed so that students can be active and motivated to explore the course materials. Based on the condition of lecture facilities in the Biology Education Study Program (especially the limitation of laboratory), it is necessary to choose a learning media that enables students to be exposed to the cell biology without waiting to be able to perform direct observation with laboratory instruments.

University of Maritim Raja Ali Haji (UMRAH) has its own Data Center called Mobile Data Center which is an effort to accelerate information and communication technology with the development of various things such as network, server, information system, and internet access bandwidth. The real condition found in the pre-study shows that 1) UMRAH owned facilities in the form of wifi-based internet network is available in all majors; 2) the use of the internet and especially the application of e-learning has not run optimally; 3) The learning process by using web-based learning media has not been fully utilized. These make web-based learning is very possible to be applied in learning process in UMRAH.

Web-based learning is a learning activity that utilizes the media sites (websites) that can be accessed through the internet network. Web-based learning is one type of application of electronic learning (E-learning). Jolliffe et al (2001), states that web-based learning generally have characteristics: (a) learning materials consisting of text, graphics, and multimedia elements such as video, audio, and animation; (b) real time and non-real time communication applications such as chat rooms, discussion forums and video conferences; (c) using a web browser; (d) the storage, maintenance and administration of the material is carried out by the web server, and (e) using the internet to facilitate communication between learners and learning materials. One of the factors of the communication process is media usage. This opportunity is captured and seen by experts to develop forms of e-media, which aims to provide an alternative model of education that is not bound by time and place. In the course of Cell Biology in Biology Education Studies Program, it has been developed and applied a web-based media. One of several effort to examine the quality of media developed can be conducted by describing students perception about the practicality of the media.

Methodology

Research was conducted at the Faculty of Teacher Training and Education, University of Maritim Raja Ali Haji in September 2017. The samples were 26 students from 75 students who took the Cell Biology course. The data were obtained through questionnaires fulfilled by students after they used web-based media on Cell Biology courses for 4 meetings. Questionnaire as a research instrument was tested to several students to obtain input for revisions. Questionnaire was designed on the basis of a

modified web-based media practicality standard from existing research. A questionnaire designed consists of 2 parts, the first consists of 15 closed-questionnaire items, and 3 opened-questionnaire items. The use of opened-questionnaire was intended to improve the research finding from student responses which may not be described by a closed-questionnaire. Data were analyzed by descriptive statistic technique which includes frequency calculation, percentage and mean calculation.

Result and Discussion

Based on the data through closed-questionnaire, the following results are obtained.

Tabel 1. Data of Students' Perceptions Obtained By Closed- questionnaire

Aspects	Indicators		Responses		
			Frequency	Percentage (%)	Percentage of aspects
Ease of use	1	Web-based media is easy to be operated/ used	26	100.0	82.7
	2	The language used on web-based media is easy to be understood	24	92.3	
	3	The instructions and commands in learning the material are clear and easy to be understood`	26	100.0	
	4	The menus on web-based media are easy to be accessed	10	38.8	
Time efficiency	5	The use of web-based media makes learning time more efficient	24	92.3	87.2
	6	I can adjust the learning speed according to the understanding by using web-based media	18	69.2	
	7	I quickly understood the cell biology material presented on web-based media	26	100.0	
The error	8	There is no error in using/ accessing menus on web-based media	8	30.8	69.2
	9	Chat rooms can be function properly	22	84.6	
	10	Videos link on web-based media can be accessed	24	92.3	
Satisfaction	11	Using web-based media makes it easier for me to understand cell biology	26	100.0	92.3
	12	Picture and video presentations help me understand cell biology	24	92.3	
	13	I am motivated to study cell biology on web-based media	24	92.3	
	14	I will spend more time studying cell biology by accessing web-based media	26	100.0	
	15	I am satisfied with the presentation of cell biology material on the web	20	76.9	

In the aspect of ease of use, most students (82.7%) rated that web-based media easy to be used. Indicator ease of use of media characterized by the ease to operate media; as well as the language used in command phrases/ usage instructions/ media instructions are easy to be understood. However, from the aspect of ease of access is still classified as less practical. Ease of use due to the language used in developing web-based media is a simple language communicative so that students understand the menu functions and instructions on the media well.

In the aspect of time efficiency, most of the students (87.2%) considered that the use of web-based media greatly helped them in streamlining their study time. Students judged that they can adjust the speed of learning according to the understanding by using web-based media. In addition, students more quickly understand cell biology by studying it through web-based media. This condition is in accordance with the main purpose of media usage is to facilitate the delivery of lecture materials. One indicator of the success of media use is the arrival of information more efficiently.

In the aspect of the error, most students judged that there are still some errors when using web-based media. Errors found due to interference from the central server so that affect when students access the media. However, this error can be resolved immediately after being fixed by the web developer. In terms of activating chat rooms and accessing videos, students did not experience any obstacles. Chat room which function is to enable student discussions with lecturers or other students indeed allows them to obtain more information and allows the occurrence of discussion of the material. The video is also easily accessible due to a direct link with *youtube*.

In the aspect of satisfaction, most students (92.3%) considered that the use of web-based media greatly impacted their satisfaction in studying cell biology. Students assessed that media use helps them in understanding the course material; the presentation of pictures and videos allows them to understand the abstract material; they feel motivated to study cell biology materials using the media; as well as satisfaction in general to the presentation of material contained in the media. From the data above, it can be seen that students basically have high satisfaction in using web-based media. Students gained the motivational and understanding benefit by using media, although there are still some errors when the media is accessed.

From opened-questionnaire filled by students there were the data about benefits, constraints, and suggestions for improvement from students to web-based media. Details of the data are as follows.

Tabel 2. Data of Students’ Perceptions Obtained By Opened- questionnaire

Benefits obtained by students
The media facilitates the learning process
The presence of images and videos makes it more motivated in learning
The media shortens study time
The media stimulates the liveliness of audio and visual modalities
The media drive cell biology more accessible
Learning becomes more effective and efficient
The media helps assess the ability of understanding by doing evaluation questions
Obstacles encountered by students
Less campus wifi quality makes it difficult to access the media
There is a video that was difficult to open
Sometimes there is still an error on the

media
English video is difficult to be understood
Power failure makes it difficult to access the media
Improvement suggestions
Fixed some errors found
Improved quality of internet network on campus for easy access
Videos should be in Indonesian or explained in lectures

In accordance with the student response to opened-questionnaires, students stated that the benefits obtained from the use of web-based media are the ease of understanding the cell biology materials, streamline the learning time, and increase motivation to learn. In accordance with the research result of Cahyono (2013), the use of web-based media for students in college can improve motivation and learning outcomes. In addition, students claimed that the use of web-based media can make them more active on visual and auditory modalities. This is in accordance with the purpose of developing and using web-based media to enable students to obtain concrete information about the material. Another benefit of using media obtained by students is to enable students to assess their learning outcomes by doing evaluation on the web. This is in line with the opinion of Cook (2004), that a good web-based media should enable students to self-evaluate the learning process it does.

Related to constraints, students conveyed that the main obstacle in accessing web-based media was about limited campus internet connection, so the process of accessing media becomes slower. English-language video also becomes an obstacle for some students. Students claimed the video and the material should be explained in the meeting activities in the classroom so that the English-language video and complex material can be well

understood. This finding is in line with the research result of Nam et al (2007) that the use of web-based media in learning will be more effective if used in an integrated environment with face-to-face activities. In other research results, the same thing was also explained by Deejing (2014), that the use of web-based media if used with certain learning techniques such as collaborative learning can improve student learning outcomes. Related to these obstacles, students advised improving the quality of campus hotspots to facilitate them using web-based media, fix errors, and add video in the Indonesian language.

Conclusion

From the results of the study can be concluded that students have positive perceptions about the practicality of the use of web-based media on the Cell Biology course. These positive perceptions are shown through student appraisal for several aspects that are on the aspects of ease of use, time efficiency, and satisfaction.

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