Study development of digital teaching materials support online learning during Covid-19

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Abstract. The implementation of education activity policy conducted at home by applying work from home (WFH) demand all of the each education institutions to perform the online learning by using any platforms provided in internet web. For college education, it is hoped to develop the information system of online learning based on learning management system. This research is intended to find out the information about the college students responds related to the online learning activity conducted in the Study Program of Language and Literature of Bahasa Indonesia Unimed since March 2020 until June 2020. The data obtained by answering the questionnaire submitted to the college students randomly. The results showed that 81.6% was in the very positive category related to the college students’ responses to the implementation of online learning. Besides that, there are some obstacles in the implementation of online learning as well, they are a small proportion of instructors and the college students who have not mastered the use of IT in the online learning process. The college students highly hope that the instructors can transform the teaching materials into digital form based on the applications so that it makes easier for them to understand the materials and can save any costs as complained by the college students when the online learning is carried out.

1. Introduction
The disruption era in education during the corona virus/covid-19 pandemic has quickly involved all levels through the online learning process. This situation is a choice that must be taken by all sides in carrying out the learning process. For that reason, it is necessary to prepare and improve properly for the teachers and the students in welcoming the online learning. It is aimed especially at higher education institutions.

One of the steps to use the network technology and information technology for the learning systems development in higher education is an online lecture system using a learning management system. The transition is from face-to-face learning system to the blended learning systems and currently it is being forced to use a whole online system that uses digital media which has the potential to optimize a better learning environment [1]. Besides that, [2] it emphasized that if it is managed properly, the online-based learning can improve the students’ ability to collaborate, to develop the collegial attitudes, to think critically which the final goal is not only to improve the academic abilities but also to help improvement of the social awareness and the better emotional control.

Viewing the urgency of implementing an online learning system during the corona virus/covid-19 pandemic, the colleges and the instructors must intensively develop the online learning model. There are three things related to online lectures, namely content, infrastructure channels or information
technology. There are three things that need to be completed related to the pre-requisites for online learning, they are: (a) the teaching and learning process is carried out through an internet connection, (b) the availability of facilities for the students in the services, such as printing, and (c) the availability of tutorials in case of there will be any difficulties in the learning process [3]. In addition, there are additional requirements, such as: (a) the e-learning activities organizer, (b) The positive mindset of the instructors and the college students in the main function of the internet, (c) the design of a learning process system that can be learned by all the college students, (d) an evaluation of a process series in the students’ learning processes, and (e) a feedback mechanism from the organizers.

The advantages of online learning [4] consist of 4 things, they are: 1) to increase the quality of learning interaction between the students and the instructors (enhance interactivity), 2) to enable the learning interactions from anywhere and at any time (time and place flexibility), 3) to reach out the students in a broad range (potential to reach a global audience), 4) to facilitate the improvement and storage of learning materials (easy updating of content as well as archival capabilities).

Based on Khoe Yao Tung, the characteristics of online learning, include: 1) The teaching materials are presented in the form of texts, graphics and various multimedia elements, 2) The communication is carried out simultaneously and separately such as video conferencing, chat rooms, or discussion forums, 3) It is used to learn in a virtual time and place, 4) It can use various elements of CD-ROM-based learning to improve the learning communication, 5) The teaching materials are relatively easy to be updated, 6) To increase the interaction between the students and the facilitators, 7) to enable the formal and informal learning communication, 7) It can use a wide variety of learning resources on the internet [5]. Therefore, the success of the online learning system depends on the several components, including the students, the lecturers, the learning resources, and the information technology. These components are integrated so that they can actually produce quality student graduates as well.

Some of the learning keys in higher education in order to be effective include; (a) The students’ interest in learning, (b) The appreciation and respect towards the students and their learning methods, (c) The accuracy in conducting the assessments and feedback, (d) The clarity of goals and interest in intellectual challenges, (e) The active control and self-development. [6]

This research aims to describe the college students’ perceptions to the online learning carried out in the Study Program of Language and Literature of Bahasa Indonesia, Universitas Negeri Medan. The students’ perceptions to the assessment of the learning quality carried out by the instructors become a concern as a first step in improving the implementation of learning process quality.

The learning quality received by the college students becomes their perception towards their assessment. Meanwhile, the expected learning quality does not always match what they receive or feel and sometimes there is a gap between those two things. The results of the college students’ responses will be used as an initial study of the academic community needs towards the development of interactive digital teaching materials based on the student centered learning in the study program. The operational definition of perception is a cognitive response that allows us to interpret and understand our surroundings. It is also said that it is a process of interpreting an environment which in this case is the online learning process. [7]

There had been conducted previously related to the use of e-learning by using the schoology portal. Some other research results related to the development of digital teaching materials have also been widely published in journals either on a national or international scale. [8] They have designed a design of literary appreciation learning in higher education by using a schoology portal. Meanwhile, [9] it is concluded that the effectiveness of learning through the development of digital teaching materials has an impact on the learning activities. Through the research conducted by Ratiyani, the increase in learning activities occurred in the learning process she had done. The increase in the learning activities after using digital teaching materials with the application of the 5E cycle learning model (Learning cycle 5E) was 71.18% at the first meeting and 79.51% at the second meeting.
2. Research Methods
The type of this research is an expos facto research where the researcher collected the data directly from the respondent through a data collection instrument. This research was conducted at the Study Program of Language and Literature of Bahasa Indonesia Universitas Negeri Medan. The process of data collection is a very important stage in the research. The collected data will be used to answer the problem formulation in this research that is finding out the percentage of the academic community needs for the development of digital teaching materials. The data obtained through interviews, questionnaires, and observations. The data analysis technique was carried out by using descriptive quantitative.

The implementation of this research was conducted based on the previous schedule by designing a research instrument first that can be used in gathering the information from the respondents who were the information source. The number of respondents was 50 students of the Study Program of Language and Literature of Bahasa Indonesia. The data percentage based on the college students’ responses questionnaire obtained were calculated based on a Likert scale with the following information: 1) a score of 5 represents the choice of "very mastered"; a score 4 represents the choice of "mastered"; a score 3 represents the choice of "less mastered", a score 2 represents the choice of "not mastered" and score 1 represents the choice of "very not mastered". The percentage of student responses is calculated by using the following formula:

\[ \text{Response Percentage} = \frac{\text{Number of score}}{\text{highest score}} \times 100\% \]  

The results of the responses percentage then are transformed into qualitative data with criteria as shown in Table 1.

| Interval of the Students’ Responses | Criteria          |
|-------------------------------------|-------------------|
| 80% ≤ Na < 100%                    | Very Positive     |
| 60% ≤ Na < 80%                     | Positive          |
| 40% ≤ Na < 60%                     | Positive enough   |
| 20% ≤ Na < 40%                     | Less Positive     |
| Na < 20%                           | Much less positive|
| (Arikunto, 2010)                   |                   |

The data results of the students’ responses then are analyzed if the percentage of responses is ≥ 61% then the implementation of online learning in the Study Program of Language and Literature of Bahasa Indonesia can be categorized as positive.

3. Results and Discussion
Perception is a college students’ response or feeling after participating in the learning. According to [10], response means a reaction or response that is acceptance or rejection, and also a having no pay attention to what the communicator says in the message. The college students’ responses were traced through a questionnaire which filled out after the college students took part in the online learning during the Covid 19 Pandemic which began in March to June 2020. The college students’ responses measured in this research consisted of 4 criteria, they are the instructors’ IT mastery, the innovation of the online learning implementation, the online learning interactions, and evaluation of the online learning in the Table 2.

The questionnaire results of the college students’ response related to the instructors’ and students’ IT mastery based on Table 2 show the mean score of was 4.12 with a percentage of 82.65% in the very positive category. As many as 85% respondents stated that the college students and the lecturers gave quick response/feedback towards the online learning. A total of 77.2% respondents answered that the availability of learning assistance services in online learning was in a ‘good’ category. The results of
the students’ responses about the use of open learning sources in doing various tasks obtained a mean score of 3.72 in the ‘very positive’ category with a percentage achievement was 74.5.

The results of college students’ responses towards the features used by the instructors in the online learning showed a mean score of 4.05 with a percentage of 81.06 which was in the ‘very positive’ category. A total of 4.17 respondent answered that the online learning strategy used was various with a percentage of 83.5. So it can also be categorized that the college students’ response in this category was also ‘very positive’.

The results of college students’ responses about the task explanations during the online learning obtained a mean score of 4.07 with a ‘very positive’ category and with a percentage of 81.4. The reflection category at the end of the lesson also obtained a ‘very positive’ category with a mean score of 4.07 and with a percentage of 81.4. Then, the use of the examination system in online learning technology that is used interactively obtained a mean score of 4.05 with a ‘very positive’ category with a percentage of 81.9.

Broadly speaking, the data recapitulation of the college students’ response can be seen in Table 2 below.

| No | The Rated Aspect                                                                 | Average Score | Average Percentage |
|----|----------------------------------------------------------------------------------|---------------|--------------------|
| 1  | The instructors mastered the use of IT in online learning                        | 4.22          | 84.5               |
| 2  | The college students mastered the use of IT in online learning                   | 4.3           | 86.7               |
| 3  | The college students’ ability in using various online learning applications     | 4.25          | 85                 |
| 4  | The college students’ and the lecturers gave quick response/feedback on online learning | 4.25       | 85                 |
| 5  | The availability of the learning assistance services related to the online learning | 3.86          | 77.2               |
| 6  | Information and technology infrastructures supported the online learning         | 3.87          | 77.5               |
|    | Average                                                                           | 4.12          | 82.65              |
| 7  | The college students took advantage of the open learning resources available on the Internet to help doing the assignments | 3.72          | 74.5               |
| 8  | The college students took advantage of the learning resources available in the digital library | 4.16          | 83.2               |
| 9  | The instructors clearly instructed how to participate in the online learning     | 4.01          | 80.03              |
| 10 | The instructors taught in a structured manner in the online learning as proved by the Program Map | 3.93          | 78.6               |
| 11 | The instructors provided the links (URLs) to other learning resources besides the main materials | 4.03          | 80.6               |
|    | Average                                                                           | 3.97          | 79.3               |
| 12 | How were the supporting media in the form of text, audio, visual, video, in the online learning used by the instructors | 4.05          | 81.16              |
| 13 | The online learning strategies used by the instructors are various (chats, conferences, quizzes, lessons) | 4.17          | 83.5               |
| 14 | The learning strategy used shows that there is a learning process, not just assignments | 4.22          | 84.4               |
|    | Average                                                                           | 4.14          | 83.02              |
The instructors gave six assignments that are included in the online learning.

The instructors explained the products/invoices that would be uploaded by the college students as a result of learning products such as papers, papers, practices, questions, audio and video.

The instructors reflected on the problems encountered by the college students during the learning.

The instructors determined the deadline for sending the assignments.

The instructors provided a space for the results of college students’ assignments in the form of products.

The examination system in the learning technology used was interactive.

|   | 15 | The instructors gave six assignments that are included in the online learning | 4.18 | 83.6 |
|---|----|--------------------------------------------------------------------------------|------|------|
|   | 16 | The instructors explained the products/invoices that would be uploaded by the college students as a result of learning products such as papers, papers, practices, questions, audio and video | 4.07 | 81.4 |
|   | 17 | The instructors reflected on the problems encountered by the college students during the learning | 4.07 | 81.4 |
|   | 18 | The instructors determined the deadline for sending the assignments | 4.14 | 82.8 |
|   | 19 | The instructors provided a space for the results of college students’ assignments in the form of products | 4.06 | 81.3 |
|   | 20 | The examination system in the learning technology used was interactive | 4.05 | 81.19 |

Average | 4.09 | 81.9 |

Based on the analysis of the college students’ responses in the implementation of the online learning in the Covid-19 pandemic in the Study Program of Language and Literature of Bahasa Indonesia, Unimed from March to June 2020, the instructors and students’ IT mastery was 77.5%, the innovation in implementing the online learning was 80.6%, the online learning interactions was 80.6%, and the online learning evaluations was 81.9%. Overall, it shows that the college students’ response to the implementation of the online learning was 81.6% in a ‘very positive’ category and can be seen in Figure 1 below.

**Figure 1. Data Percentage of the College Students’ Responses**

Based on the above analysis, it can be seen that the college students gave a ‘very positive’ response to the implementation of the online learning at the Study Program of Language and Literature of Bahasa Indonesia, Unimed. This indicates that the online learning increases the college students’ motivation and increases the concepts knowledge and skills from the competency attainment standards.
in the subjects taught by the instructors. Surely, the online learning in the Covid 19 pandemic can be said as conducted successfully although surely there were various obstacles in the implementation of the learning.

The various obstacles were documented based on the interviews results conducted by the researcher with several respondents. Some of the obstacles faced are, there are still a small number of instructors and college students who have not been able to use IT for the online learning process, so the online learning is only oriented towards giving the assignments. Then, the college students expected the presence of the teaching materials for courses that can be accessed offline based on the applications that can be used on Android.

Related to the digital teaching materials, the presentation of printed teaching materials should be transformed into digital form. The current learning tends to be more attractive to have visual displays, so that the college students are motivated to study the materials given, because it can be learned in a fun way. Some various research results also showed that the level of the college students’ need for developing digital teaching materials is very high. [11] It concluded that the college students’ need some interesting learning media and teaching materials that are packaged in digital form. Surely during the Covid 19 pandemic, learning innovations that related to digital form must be pursued. One of them which is rarely done by the instructors was developing application-based digital teaching materials that are able to support the college student-oriented learning

4. Conclusion
The research results showed that 81.6% of the college students’ responses to the implementation of the online learning in the Study Program of Language and Literature of Bahasa Indonesia, Unimed was ‘very positive’. This data showed that in general, the online learning conducted during the Covid 19 pandemic period from March to June 2020 was successfully implemented optimally. In addition, based on the analysis, it is revealed that the various obstacles arise include the fact that there are still a small number of the instructors and the college students who have not mastered the use of IT in the online learning process and there is a strong desire for the college students to obtain various learning conveniences in the current digital era such as the presence of accessible teaching materials via their androids

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