# Blended Learning Development of Non-Communicable Diseases Dietetics Subject

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**ABSTRACT**

The Corona Viruses Diseases outbreak made the government decide that all zones' learning methods must be implemented online. For this reason, it is necessary to change from conventional learning to internet-based learning, one of which is blended learning. Dietetics of non-communicable diseases is one of the compulsory subjects in the nutrition study program. This study aims to develop blended learning in a non-communicable disease dietetic subject. The research method used is Research and Development with ADDIE development model (Analysis, Design, Development, Implementation, Evaluation. In the evaluation stage, 80% of students are interested in learning with learning media on i-learn, 85% stated quality teaching materials, 54% stated that the interaction between lecturers and students was good, and 70% of students agreed that blended learning increased independence learn. Blended learning is beneficial for lectures during a pandemic. Furthermore, it is necessary to evaluate the media expert's judgment regarding appearance, practicality, and pedagogy.

***Keywords:*** *Blended Learning, ADDIE Model, Learning Model, Nutrition, Covid-19.*

## 1. INTRODUCTION

The Corona Viruses Diseases (COVID-19) outbreak has ravaged the world since the first cases were found in Wuhan, China, in December 2019 [1-2]. The existence of COVID-19 has an impact on all sectors of life. The COVID-19 pandemic has created the most massive disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Closures of schools and other learning spaces have impacted 94 percent of the world's student population, up to 99 percent in low and lower-middle-income countries [3-4].

The impact is that all work is carried out online from each home or called Work From Home (WFH), including teaching and learning activities at schools and universities. Based on Press Release Number: 137 / SIPRES / A6 / VI / 2020 Tetang Pembelajaran Semester Gasal 2020-2021, it is determined that theoretical learning in tertiary institutions in all zones is carried out online [5]

Learning activities have also changed into online-based learning or so-called electronic learning (e-learning). This e-learning learning strategy is carried out in various ways, starting from using websites, social media to teleconferences [6]. For this reason, it is necessary to develop learning methods, learning media, and assessments that are by these conditions and also welcome the 4.0 era, which does not require learning to be carried out face-to-face (in class) but can be carried out online (outside the classroom) [7].

In Alwen's research on students' and educators' readiness in doing online learning and research on student motivation in learning, mainly discussing the design of learning messages in blended learning to increase motivation and meaning of the material by students. [8]

One of the compulsory subjects in the Andalas University nutrition study program is a non-communicable disease dietetic course. This course will be developed to be able to apply blended learning. This

subject is included in the core scientific group in the human nutrition study group. This course discusses the management of Hospital Nutrition and Nutrition Care Processes (NCP), which are the same for all clients with various diseases in the hospital [9].

For this reason, researchers are interested in conducting research aimed at developing online learning (blended learning) in the Dietetics course of non-communicable diseases with the ADDIE model.

## 2. METHODS

The research was conducted in May - September 2020 with a learning system design using the ADDIE model.
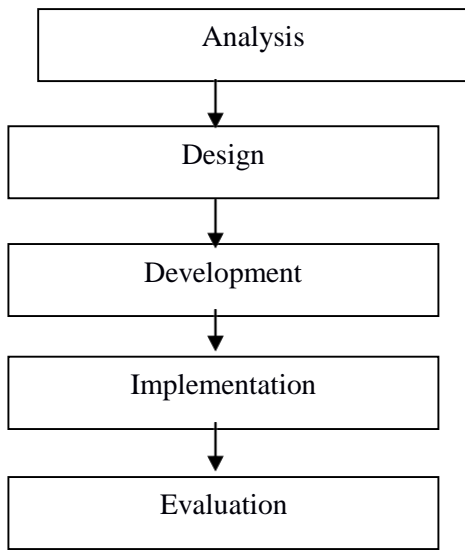


**Figure 1.** ADDIE model

Stage 1. Analysis

At this stage, the main activity is analyzing the need for developing a Blended Learning model and analyzing the feasibility and requirements for developing e-learning media.

Stage 2. Design

The e-learning media design that supports the Blended Learning model in the non-communicable disease dietetic course is made in this stage.

Stage 3. Development

The steps in this stage are: creating learning objects (learning media with e-learning supplements). As well as programming activities of all e-learning media plans/designs such as supporting features (materials, assignments, quizzes, discussions, and others)

Stage 4. Development

This stage applies a synchronous and asynchronous application of blended learning in the dietetic course of non-communicable diseases.

Stage 5. Evaluation

This stage is carried out by monitoring and evaluating the implementation of blended learning. The descriptive method was carried out in the evaluation stage using a questionnaire via Microsoft Form for all

46 students who took courses. The questionnaire contains questions about the implementation of blended learning and student learning independence.

## 3. RESULT AND DISCUSSION

The Blended Learning Model Development Process, The development of the Blended Learning (e-Learning) model uses the ADDIE development model, which consists of 5 stages, namely (1) analysis, (2) design, (3)

development; (4) implementation; (5) evaluation. The translation is as follows:

Analysis

At this stage, the main activity is analyzing the need for developing a Blended Learning model and analyzing the feasibility and requirements for developing instructional media at universities. The learning media that already is i-learning. However, the use of i-learning is still not optimal. With this blended learning, it can optimize i-learning services that can be accessed by students. So far, the learning process is still dominated by traditional face-to-face learning through lectures, discovery learning, conceptual learning, and small group discussions. Also, what is analyzed is learning tools in the form of RPS and learning media that can be used with online learning.

Design

Based on the discussion at the analysis stage, a design of e-learning learning media that supports the Blended Learning model in the dietetic course of non-communicable diseases is made. RPS is adjusted to online conditions that include course descriptions, graduate learning outcomes, course learning outcomes, activities, approaches, learning forms and methods, assessment methods, and references. Furthermore, media selection is carried out based on the learning objectives to deliver the subject matter. The media developed are video and slide share.

Development

This stage is a production stage where everything that has been made in the design stage can be realized. The steps in this stage are: creating learning objects (learning media with e-learning supplements). At this stage, it is an activity to program the entire i-learning media plan/design. In i-learning, the design is carried out by incorporating the developed media into i-learn.

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Implementation.

The implementation stage is implementing blended learning using i-learning and face-to-face online media, namely zoom meetings. Also, they hold discussions on Google Classroom and what's app groups.

Evaluation,

Reviewers carry out evaluation regarding the semester learning design and the media used during learning. Also, the evaluation is carried out by students. Students are given a questionnaire containing questions about the implementation of blended learning and student learning independence.

**Table 1.** Evaluation of the Learning Process

| Interest in learning with learning media (video, ppt) on i-learn | |
| --- | --- |
| Very disinterested | 9% |
| Not interested | 9% |
| Interested | 80% |
| Very interested | 2% |

| The interaction between lecturers and students | |
| --- | --- |
| Less | 13% |
| Enough | 30% |
| Well | 54% |
| Very good | 2% |

| Quality of teaching materials | |
| --- | --- |
| Less quality | 13% |
| Quality | 85% |
| Very high quality | 2% |

| The learning implementation is well organized | |
| --- | --- |
| Less | 29% |
| Enough | 29% |
| Well | 41% |
| Very good | 2% |

Table 1 shows that most (80%) students are interested in learning with learning media at i-learn, more than half (54%) of students assess the interaction of lecturers and students as good by using i-learn, most (85%) students assess the quality of the teaching materials presented and less than half (41%) rated the implementation of learning as well organized. The low learning organization is due to changes in lecture schedules, network constraints, and students' need to deliver material directly at every meeting with applications that support online lectures for face-to- face**.**

The various shortcomings and obstacles that occur during the use of learning strategies using i-learning do make learning science and the environment a little hampered. Even so, this i-learning is one solution so that learning can continue when there is an outbreak of COVID-19.

The participation of students in e-learning is what determines the success of implementing this i-learning. Students who actively participate and provide comments when lessons take place with i-learning will make students understand more about the knowledge being learned [10]
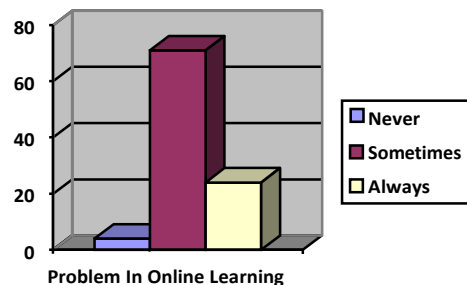
**Figure 2** Problem with Blended Learning

As a learning strategy, e-learning is the ideal choice during the COVID-19 outbreak. It is because face-to- face meetings are challenging and impossible because of the need for physical distancing (maintaining distance between individuals) to avoid the spread of COVID-19. It can also be used by using an internet package that is cheaper than face-to-face applications such as zoom meetings, Microsoft team, and google meet. Although there are 70% of students sometimes have internet network problems.

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Also, an evaluation of student learning independence using the blended learning method is also carried out. Information on learning independence was collected by providing ten statements. Those ten are: to be very efficient in helping students obtaining learning information, to increase activeness in learning, to have very efficient online quizzes (pre-test and post-test) presented in online classes, to have online and face-to- face blended learning, to support each other to strengthen understanding, to make students independent of others, to make students independent in solving the questions that must be done, to make students collect assignments on time, to make the learning atmosphere calmer and more comfortable, and to have foster creativity in the learning process.
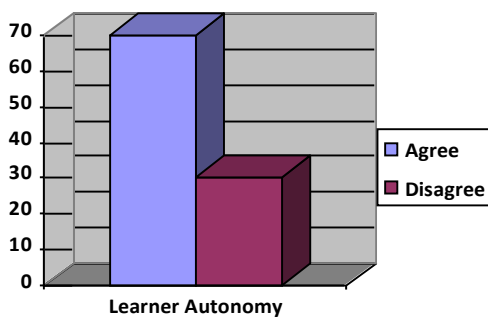


**Figure 3** Learner Autonomy

In researching Ulfia, the problems that are often faced in this blended learning system design research are formulating a mixture of online and face-to-face learning. Not all students are ready to learn through online learning, inadequate online learning facilities, and less motivated students in learning. Some of these problems are still an obstacle to applying blended learning. Student responses to the blended learning model assessment on the pedagogical aspect were 95%, which indicates that this aspect was in the outstanding category. If the percentage value is converted to the effectiveness category, the Blended Learning model is useful if it is in a suitable category[11]

Noer's research assesses that blended learning can improve student learning activities. Assessment of student activity obtained a percentage score of 87%, indicating that student activity in using the Blended E-Learning model based on the LMS Moodle category is Very Active. Also, students seem active by providing feedback questions to discussion participants [12].

Besides that, there are shortcomings in blended learning, as well as having weaknesses. As with network constraints, Irna et al.'s research on satisfaction and evaluation for the application of Blended Learning in the Postharvest Technology course found that students entirely agree that it is challenging to follow blended-based learning, this reveals that some students are somewhat challenging to

follow because of the lack of internet connection. The unequal quality of internet services that students have causes them difficulty if they always have to be online based [13].

Delivering material directly with the online meeting application requires an extensive network connection and credit. Online learning must pay attention to dynamic, engaging, and interactive. Teachers should set time limits and reminders for students to make them alert and attentive. Efforts should be made to humanize the learning process to the best extent possible. Personal attention should be provided to students so that they can quickly adapt to this learning environment. Communication with students can be maximized on existing social media [14].

## 4. CONCLUSION

Based on the research results that have been stated, it can be concluded that most students are interested in learning with the media on i-learning, half of the students convey the interaction between lecturers and students is good, quality teaching materials and learning are well organized. Also, the development of blended learning can increase student learning independence. Besides that, there are weaknesses in the implementation of learning due to network constraints for online learning.

## ACKNOWLEDGMENT

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