

Implementation of Problem-Based Learning in Video and Image-Based Tutorial Discussion with Increasing Student Learning Outcomes for Block 1.A (Introduction to Midwifery Education)

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ABSTRACT

Bachelor of Midwifery at Medical Faculty of Andalas University has implemented a Student-Centered Learning system with a Problem Based Learning (PBL) method approach. One of them is using a block system, and the activity is in the form of tutorials. Tutorials are carried out by utilizing videos and pictures when explaining the learning outcomes or learning outcomes obtained. In the situation of the Covid-19 pandemic, the Blended Learning system learning method was carried out on the i-Learn application. Guides and tutorial activity results are uploaded to the application, and the evaluation process in the form of a final block assessment also uses a computer-based test (CBT) on the i-learn application. The purpose this research was to improve student learning outcomes in Block 1.A course by comparing the effect of using videos or pictures on tutorial activities.

The subjects of this research consist of 2 groups, the intervention group (Class of 2021 students who used the I-Learn application, videos, and pictures) and the control group (Class of 2020 students with an online system without videos and pictures). The activity was carried out for 5 weeks, and in the 6th week, an assessment was carried out for all aspects of the learning method. Based on the results of the study, it was found that student learning outcomes had increased and were above the average (40%), and there is a decrease in the percentage of students who repeat in block 1.A.

Keywords: *problem-based learning, videos, tutorials, student assessments.*

1. INTRODUCTION

Midwifery education has implemented a Student-Centered Learning system with a Problem Based Learning (PBL) method approach. One of them is using a block system, and the activities are in the form of tutorials. The tutorial is currently starting to be carried out by utilizing videos and pictures when explaining the learning outcomes or learning outcomes obtained. Video is an electronic technology system for retrieving, recording, storing, and sorting an image so that it looks like the actual situation and uses sound.¹ Video is included in the category of audio-visual teaching materials, and students tend to be easier to remember and understand if they don't just use one kind of sense only.

The use of video media has a function as a function of attention, affective function, cognitive function and compensatory function. The function of attention is that video media can attract attention and direct the concentration of students on video material so that they are able to achieve affective functions. The affective function is that video media is able to arouse the emotions and attitudes of students. the presence of both functions also helps to achieve the next function, namely cognitive function. This function is able to accelerate the achievement of learning objectives to understand and remember messages or information contained in images or symbols².

PBL learning process activities carried out at students in the midwifery study program, later must be able to learn sustainably throughout life. The development of science and technology in the health sector requires innovation in the learning process. to achieve graduate standards according to KKNI level 6 which consists of knowledge, special skills, general skills and attitudes. One of the systems in PBL is the Block system which starts in the first semester. In this block there is a tutorial activity in which each group consists of 10-12 students.

The previous year, during the Covid-19 pandemic, the decision of the leadership of Andalas University referred to the decision of the minister of education, namely the online learning process. Therefore, the midwifery study program

is conducted online using the Zoom Meeting application. This policy is contained in the Circular of the Chancellor of Andalas University Number: 8/UN.16.R/SE/2020 concerning Campus Activities in the Context of Covid-19 Pandemic Awareness and Circular of the Dean of the Faculty of Medicine, Andalas University Number: 2055/UN16.2/SE/ 2020 on Prevention and Control of Covid-19 in the Faculty of Medicine, Andalas University³.

In 2021, with the reduction of Covid-19 cases, tutorial learning activities, which are small in number (8/10) people in groups, are carried out face-to-face and developed using media, namely videos and pictures. Each student presents an explanation of learning achievements using video and or image media³.

1.1 Brief Description of Block 1.A

Block 1.A, entitled Introduction to Midwifery Education, is a block that must be studied by early semester students in the Midwifery Study Program, Faculty of Medicine, Andalas University. This semester is a transition period for the learning process by students, namely the transition from a teacher-centered system to a student-centered system. Various changes must be able to be adjusted by students because this is the beginning of the process of adult education. Previously, students only tended to adopt by remembering without understanding, now students are asked to have the ability to learn how to learn (learn how to learn) or learn how to think (learn how to think), to become self-directed learners.

The learning method in higher education uses the adult learning method (higher ordered learning). This method has a different approach, scope, objectives and strategies from education in secondary schools. Studying in college, especially medicine, midwifery is emphasized on continuous and lifelong education.

Mastery of the material in Block 1.A is important, because it will provide provisions for students in the formation of thinking processes and the basis for professional behavior (professional behavior) in the future. At the end of the block, there will be an evaluation of learning theory in block 1.A in the form of a Computer Based Test (CBT).

1.2 Learning Objectives or Achievements

After the tutorials and Block 1.A activities are completed, students are expected to have abilities including aspects of attitude, general skills, special skills and knowledge³.

2. RESEARCH METHOD

This research uses a comparative study. Bivariate analysis in the form of categorical correlative using t-test, to test the hypothesis using Mc.Nemar.

2.1 Learning Method Development

Problem-based learning (PBL) is a learning strategy where students learn together in small groups through two main learning activities: small group discussions facilitated by a tutor and independent study. In PBL learning, the scope of learning is more focused and specific. The amount of time used for the PBL process is also more limited than the amount of time used for pure SCL. In PBL, the achievement of learning objectives by a student can be influenced by the results of extracting information from their colleagues in small groups because the information obtained by each student will be discussed to improve the knowledge they have acquired.⁴

2.2 Planning⁵ :

- a. Lecturers identify, define, and classify learning objectives that will be discussed in each PBL learning session.
- b. The lecturer arranges, selects, or looks for the right scenario to stimulate students to learn the learning objectives that have been set for each PBL session. Scenarios can be in the form of cases, film fragments, pictures, news footage, and others.
- c. The lecturer estimates the schedule for the 1st PBL tutorial, the amount of independent study time needed to achieve all the learning objectives that have been set for the PBL session, and the schedule for the 2nd PBL tutorial.
- d. The lecturer prepares a rubric for assessing student activities during the tutorial process, which consists of attendance, creativity,

relevance, attitude, and other assessment points that are deemed necessary.

- e. Lecturers divide students into small groups that can consist of 5-10 students per group, each group ideally facilitated by a tutor.
- f. PBL tutors do not have to be lecturers in the related disciplines discussed in the scenario. PBL tutors can be anyone who can carry out the role, with the following roles:
 - 1) Help the PBL group leader maintain group dynamics.
 - 2) Ensure that the group is able to complete the learning objectives that have been set.
 - 3) Ensure that all students have performed their assignments correctly.
 - 4) Help suggest a format for presenting the results of self-study that is appropriate for group members (must use videos and or pictures)
 - 5) Encourage students to evaluate their understanding of the material by asking questions, explaining the material in their own words with pictures and schematics.
 - 6) Provide feedback to students regarding their participation in the tutorial process and regarding the achievement of learning objectives.

Each tutorial activity is carried out, the report is presented at the plenary session and all materials are uploaded to i-learn by each person in charge of the group. In the I-learn application, a slot has been provided, which is a vehicle for uploading the material.

2.3 Student Assessment Development

Development of a student assessment system that includes: Process assessment, Result assessment, Selection of assessment techniques according to competency level.³

2.4 Learning outcomes

After the tutorials and Block 1.A activities are completed, students understand about the Problem Based Learning, Communication, Legal aspect and patient safety, biopsikososiocultural theory and epidemiology³. The expected final

score distribution is >70 (minimum quality score = B+).

3. RESULTS AND DISCUSSION

3.1 Sample Characteristics

The sample in this study was 35 students in the Class of 2020 who were grouped as a control group, and the Class of 2021 consisted of 76 students who were grouped as an intervention group. Each group consists of 8-10 people so that the Class of 2020 has 5 groups, and students of the Class of 2021 consist of 8 groups. Each group is accompanied by 1 tutor.

The control group means the group that is not given intervention using videos or pictures during tutorial activities. The intervention group means the group that is given intervention in the form of using videos and or pictures during tutorial activities, both on the first day and the second day. On the 2nd day of the tutorial every week, students must use videos or pictures when sharing information from the learning objectives that have been obtained.

The tutorial activities for the Class of 2021 students are carried out face-to-face but still with the problem-solving method of the cases that have been given / Problem Based Learning (PBL) tutorial activities carried out by each group. Class of 2020 students totaled 34 people with the PBL lecture system, which was carried out online for every lecture activity due to the covid-19 pandemic.

3.2 Results of Tutorial Activities with Blended Learning Applications by utilizing videos and pictures

3.2.1 Block Guide

The Block Coordinator and the members have prepared a Block guide which will be sent to each tutor and student in the soft file. The Block 1. Students can also access a Guide on i-learn with the web address : <https://fk.ilearn.unand.ac.id/course/view.php?id=1278> along with lecture topics and lecture schedules during the block.

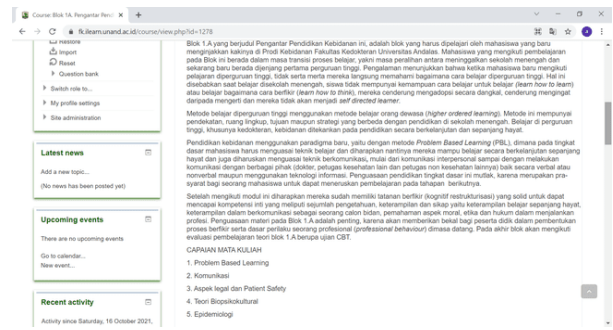


Figure 1. i-learn Pages for Block 1.A

3.2.2 Video and Image-Based Tutorial System

Block 1.A lasts for 5 weeks with student activities divided into 8 groups with 8 tutors who have received tutor training. Each tutor has been given a tutorial assessment sheet that includes an assessment of aspects of discipline, activity, and creativity and the relevance of the opinions submitted with the existing literature and attitudes. The current tutorial activities have been carried out face-to-face compared to last year, which was still due to the pandemic, so all activities using the Zoom Meeting application with existing links from study programs and student application links. For example, the Zoom Meeting link used is

<https://us04web.zoom.us/j/5635038943>.

Every Monday from 07.30 – 09.30, the tutorial applies the seven jumps method for steps 1-5. Every Wednesday from 07.30 – 09.30 applies the seven jumps method for steps 6-7.

During tutorial activities on day 2 (Wednesday) and in Step 7, sharing information, students in each group are expected to use videos or pictures to explain the Learning Objectives (LO) they have received. The translation is carried out on several LOs and also exists for each LO with different students. Each student in each group plays an active role in this information sharing activity. The tutorial activity assessment sheet will get 3 points if they explain with videos or pictures. If they do not use pictures or videos, they can get points 2 or 1, according to the information submitted that is relevant to the LO displayed.



Figure 2. One of the Examples of Images used in Explaining LO related to the Seven Jumps Method Steps during Tutorial Block 1.A

3.2.3 Final Score Results after Application of Video and or Image Based Tutorials

Tutorial activities are carried out for 5 weeks, and during the 6th-week, students will take the final block exam using the Computer Based Test (CBT) method using the i-learn application. Seen in Figure 3 below;

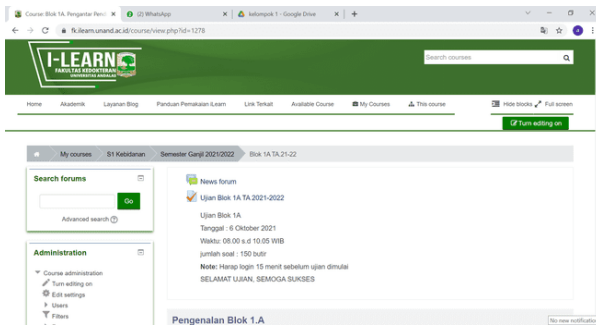


Figure 3. Block 1A exam slot for FY 2021-2022 on the i-Learn application

From the results of the tests that have been carried out, the following results are obtained:

a. Tutorial Rating

Table 3.1 Tutorial Value of the Two Groups

Category	2020		2021	
	F	%	F	%
A	31	91.2	52	68.4
A-	2	5.9	22	28.9
B+	0	0	2	2.6
C+	1	2.94	0	0

Based on the table above, it is known that in 2020, most students got an A in tutorial activities (91.2%). The same thing in 2021, which is 68.4%. However, in 2020, there were

still students who had a C+ score of 2.94%. For 2021, students pass the semester for tutorial activities.

b. CBT Exam Score

Table 3.2 Block 1 CBT Exam Scores A

Category	2020		2021		P-Value
	F	%	F	%	
A	0	0.0	1	1.3	0.001
A-	0	0.0	0	0.0	
B+	0	0.0	4	5.3	
B	2	5.7	30	40.0	
B-	6	17.1	12	16.0	
C+	7	20.0	10	13.3	
C	9	25.7	9	12.0	
D	5	14.3	6	8.0	
E	6	17.1	3	4.0	

Based on the table above, the Block 1.A exam conducted with the computer-based test (CBT) system on the i-learn application is known that the 2020 batch of students, the majority of students get C (25.7%), while Class 2021, most of the students mostly get B (40%). The table also shows an increase in the CBT test results obtained by students who were given the intervention (Class of 2021). The value of A increased from the previous batch (0 to 1.3%), the value of B+ from none to 5.3%, and the value of the decrease in the value of E was from 17.1% to 4%. Based on statistical tests, it was found that there was an influence from the intervention of using videos and or images on tutorial activities.

One part of the problem-based learning method (Problem Based Learning) is a tutorial activity. The tutorial activity uses the seven jumps method. In the tutorial activity, students identify words that they do not understand from the existing scenario. After that, they will try to convey the meaning of the word according to the knowledge they currently have, the existence of a hypothesis, identify problems, and make a scheme from the description of the hypotheses they have described. Then they will find the expected learning objectives from the case presentation. In this tutorial, the discussion aims to activate students' prior knowledge,

invite students to convey existing information to seek new information.⁶

The next step that students take is to study independently according to the LO they get. During this independent study, students may use learning media that they can find and understand the information. The final step is to convey information from the results of the self-study that has been carried out. Each student uses pictures and videos from the LO that they get so that students in one group can receive the same information.

Other studies also mention that teaching media using video cases in pediatric cases for medical students can improve the ability to analyze and evaluate pediatric diseases.⁷ Video can assist students in analyzing an existing material or disease.

The existence of group dynamics, tutors, and scenarios is an essential part of this tutorial activity. The tutor must have the ability to communicate formally and informally with students, and the tutor must also be able to make students feel comfortable asking questions. Both of these have a significant effect on recalling ability and learning achievement. Meanwhile, the specifications and expertise of tutors also significantly affect student learning achievement.⁶

This research also follows the learning pyramid theory by Edgar Dale (1946), which states that 90% of people learn from the real things they do. Videos, images which are audio-visual media, will help students better understand the explanation of the theory they get.

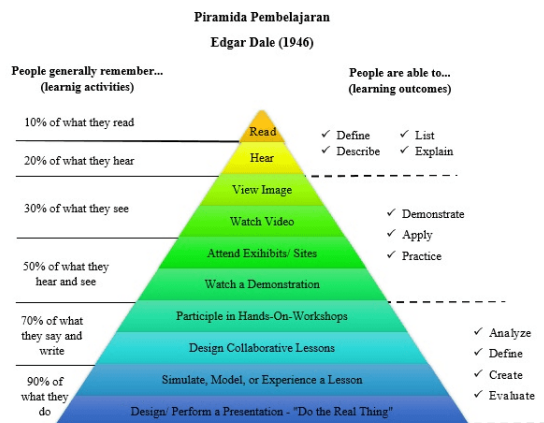


Figure 4. Edgar Dale's Pyramid of Learning (1946)

According to the research shows the level of effectiveness of using learning media such as video presentations as teaching aids for learning is very effective.⁸ Another research, from the analyzed data, it appears that using learning videos improves student learning experiences because the use of media such as videos improves the teaching and learning process. The fact that visual media helps students retain concepts and ideas.⁹

Another study also stated that students' responses regarding the development of video tutorials using Camtasia Studio 8.5 in the Geography Information System (GIS) course were in a suitable category. This shows that the video development has been good and has received positive responses from students.¹⁰

This is also in line with other studies that the implementation of tutorial scenarios in the form of video cases shows an increase in the achievement of learning objectives and an increase in the final exam score for tropical infectious disease blocks.¹¹ Scenarios in video form will better describe real conditions than symptoms written in a paper.¹² Teaching media in the form of videos can train students to be more active in listening and students' emotions in listening to the patient's disease journey. Video case teaching media will also provide opportunities for students to be able to observe and study examination procedures and physical findings on patients.¹³

According to another study shown that students and tutors prefer learning and teaching with video-based cases, and feel they represent a better use of time, the use of video-based cases is associated with a meaningful decrease in critical thinking during PBL tutorials compared with text-based cases.¹⁴

Two-way communication in the learning process will run more optimally with the help of facilities delivery of messages or media, such as videos, symbols, images and so on. Appropriate media in learning can provide the same stimulus, compare experiences and generate the same perception. The use of video in the learning process is able to stimulate students to provide responses or feedback, interact through various questions and statements about what is being said described, either psychomotor or affective. this supports the impression of two-way learning.

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