Enhancing Student Learning Motivation: A Problem-Based Learning Approach with Flipped Classroom Model in Distance Learning Design

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Article Info

Abstract

This research aims to increase students' learning motivation by developing a Problem-Based Learning learning design using the flipped classroom model. This research uses an approach that is part of non-experimental quantitative research. The sampling technique used purposive sampling. This research was measured using a learning motivation observation sheet in the form of a motivation rubric. Increased motivation was analysed based on a questionnaire based on the ARCS rubric. This research shows increased motivation in the learning process with the flipped classroom model and problem-based learning design. At the attention stage, there was an increase in student motivation by 13% from the first meeting to the second meeting and a rise of 6% from the second meeting to the third meeting. In the relevance aspect, there was an increase of 26% from meeting one to meeting two and 3% from meeting two to meeting three. Then, part of confidence, from the first to the second meeting, there was an increase of 9%, and from the second to the third meeting, it increased by 10%. Finally, in the aspect of satisfaction from meeting one to meeting two, there was an increase of 9%. Moreover, from meeting two to meeting three, there was an increase of 12%. It was concluded that the average increase in student motivation from the first lesson to the third lesson was 3% to 13%. In the future, further attention is needed on the affective and psychomotor aspects.

How to Cite

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INTRODUCTION

The challenge of implementing education in this era is that it must be able to keep up with the demands of the digital era (Abuhammad, 2020). The adoption of distance learning platforms and the shift towards online learning requires innovative strategies that encourage active participation, critical thinking and application of knowledge (Llantos, 2022; Onggirawan et al., 2023). Implementing student-centered learning provides educational opportunities to explore new methods that are dynamic and appropriate to the demands of the digital era (Jayanti, 2021). In this context, the learning model emerges as an approach that has the potential to increase student learning motivation in distance learning.

Distance learning provides opportunities for students to learn simultaneously in different spaces and times(Adi et al., 2021; Assunção et al., 2020; Flores & Swennen, 2020). Educators and students can meet online with creative and innovative content and learning media that can activate learning (Gay, 2016; Motaghian et al., 2013)their system use and satisfaction during course delivery. This study adapted Holsapple and LeePost's (Decis Sci J Innov Educ 4(1. However, in the distance learning process, there are still obstacles, such as educators and students who are not even ready to carry out distance learning (Abuhammad, 2020; Yorkovsky & Levenberg, 2022), students who fail to focus on learning and students who less enthusiastic about learning (Cutri & Mena, 2020)temporarily or permanently, due to the coronavirus pandemic (Allen & Seaman, 2016; Arum & Stevens, 2020; Garrison, 2011. In addition, the unpreparedness of educators in carrying out a combination of active, creative, and innovative learning is the central polemic in distance learning. Therefore, it is necessary to formulate learning strategies and patterns that can be solutions for activating students in the learning process (Eom, 2013).

The current state of education underscores the urgency to explore innovative strategies that can elevate the quality of remote learning. Understanding how instructional approaches influence student motivation becomes imperative with the global shift toward online education. This research aims to guide educators and institutions toward more effective distance learning practices prioritising student engagement and achievement by addressing this pressing need.

Learning is a process that determines the success of education, which must be designed effectively and efficiently (Bintang et al., 2020).

Innovative and cooperative learning designs can overcome obstacles that arise in learning (Strayer, 2012). In this context, an innovative learning design that has the potential to increase student learning motivation is the Problem-based Learning PBL learning model based on Flipped classrooms.

PBL is an active learning model (Da Silva, 2016; Silva et al., 2018) and meaningful (Da Silva, 2016) that can integrate cognitive, behavioural, and social dimensions of students in learning activities in class (Silva et al., 2018). Through the PBL model, students are directed to use the surrounding environment as learning materials in the classroom. PBL learning is proven to be better than conventional learning methods (Supratiknya & Kristiyani, 2006) and able to improve student competence (Khoiriyah et al., 2015)

The PBL model can motivate through experience gained from learning activities. In addition, the Flipped Classroom Approach also offers innovative learning by inviting students to learn in and outside the classroom. Combining the two offers learning potential that stimulates critical thinking, collaboration, and active student participation, which can increase learning motivation.

Research by Damayanti et al. (2020) shows that flipped classroom-based PBL can encourage students' creative thinking abilities in mathematics. In addition, (Hu et al., 2019) stated that combining flipped class and PBL learning models could be a better choice than traditional methods. Thus, several relevant studies have shown the successful application of this learning model. However, this research has yet to be carried out optimally. This is demonstrated by the critical review research conducted by Lo & Hew (2017) regarding the flipped classroom, which states that the flipped class model influences learning. However, further research is needed to evaluate the use of the flipped classroom approach over a longer time frame in design-based studies.

Based on the description of the previous paragraph, these two learning models have advantages that can be combined in learning. This study seeks to contribute to the existing body of knowledge by shedding light on a relatively unexplored area—the convergence of Problem-Based Learning and the flipped classroom model within distance education. By extending the discourse beyond individual approaches and delving into their interplay, this research offers a novel perspective on how integrating these methods can positively impact student motivation, a key driver of successful learning outcomes. Therefore, based on this background, this research focuses on Stu-

dent Learning Motivation using a Problem-Based Learning Approach with the Flipped Classroom Model in Distance Learning Design.

METHOD

This research uses an approach that is part of non-experimental quantitative research. The sampling technique used purposive sampling. This technique was chosen because, in this research, the researcher aims to improve learning outcomes in student motivation, which tends to be low, by using the Flipped Classroom model with Problem-based Learning. The population in this study was 24 fifth-semester students.

The primary data collected in measuring student learning motivation is observer observations. The instrument used in observing student learning motivation is the observation sheet. In this study, there were two learning designs used. The learning syntax was adjusted to the RPS derived into SAP. The learning design can be seen in Figure 1 below.

Figure 1. Combination Design of Flipped classroom and Problem-Based Learning models

Figure 1 explains that the learning is carried out as follows: PBL is presented in pre-class as an initial stage for students in learning material through related sources, PBL is presented in the classroom as a control for students' discussion process and understanding of the material, PBL comes after learning as a process of understanding the material studied in class.

The measurement of learning motivation is carried out with the ARCS motivational instrument. Measurements are carried out three times after each learning process is completed. Then, the results are analysed by the following formula.

Attention percentage $=\times 100\%$

Relevance percentage $=\times 100\%$

Confidence percentage $= \times 100\%$

Satisfaction percentage $= \times 100\%$

Information:

SA : Total average score on *attention* aspect statement

SR : Number of average scores on *relevance* aspect statements

SC : number of average scores on *the confidence* aspect statement

SS : number of average scores on *the satisfaction*

aspect statement

XA : number of *attention* aspect statements

XR : number of *relevance* aspect statements

XC : number of *confidence* aspect statements

XS : number of *satisfaction* aspect statements

N : number of protégés

K : Maximum score of a statement.

Based on the ARCS calculation formula, data is obtained in the form of achievement in the form of a percentage of achievement of each aspect classically. The data is categorised based on the following Table 1.

Table 1. Percentage and quality of motivation

Success Percentage (%)	Motivational qualities	Value with Letters
80-100	Very good	A
66-79	Good	B
56-65	Enough	C
40-55	Less	D
30-39	Fail	E

Source: Arikunto (2009)

RESULT AND DISCUSSION

Description of Research Data

This research conducted a trial of the flipped class and Problem-Based Learning model learning design for learning Animal Anatomy Structures in Semester V. The research sample was 24 students. The target in this study is four meetings in class. This is adjusted to the suitability of the material being taught. The learning process takes place online using the Zoom Meeting application. Therefore, on this occasion, we will convey the progress of learning through the results of observing each lesson.

Observation of Learning Motivation

Motivation is a mental impulse that drives and directs human behaviour, including learning behaviour. Motivation contains the presence of desires, expectations, needs, goals, objectives, and intensity. This state of the soul is what controls the behaviour of a person. Three components surround a person's motivation: needs, drives, and goals (Dimyati & Mujiyono, 1994). Motivation with the ARCS approach was introduced in 1984 by Keller (2010) (Li `) by assessing four aspects, namely *attention*, *relevance*, *confidence,* and *satisfaction),* The motivation to learn in BDP classes has increased from the research process. Motivation data is taken through student questionnaires.

Learning motivation is observed through filling out the learning motivation questionnaire by students. This questionnaire is filled in after going through the learning process. Results are obtained by filling out a questionnaire on *Google form* filled out by students. Data from student questionnaires were obtained per meeting in Table 2, Table 3, and Table 4.

Table 2. Percentage of Motivational Observations on Learning 1

Metting	Indicator	Average Percentage	Total Average	Category
I	Attention	75,45	73,83	Good
	Relevance	63,23		
	Confidence	77,23		
	Satisfaction	79,2		

The data derived from the student questionnaire at the first meeting was 75.45% on the attention aspect, 63.23% on the relevance aspect, 77.45% on the confidence aspect, and 79.2% on the satisfaction aspect. Furthermore, in the second learning (Table 3), results were obtained that 88.02% in the attention aspect, 90.63% in the relevance aspect, 86.72% in the confidence aspect, and 88% in the satisfaction aspect.

Table 3. Percentage of motivational observations on learning 2

| Metting	Indicator	Average Percentage	Total Average	Category
II	Attention	88,02	88	Very Good
	Relevance	90,63		
	Confidence	86,72		
	Satisfaction	88		

The results of the student motivation questionnaire in Table 4 in the third learning obtained 94.27% in the attention aspect, 93.75% in the relevance aspect, 96.88% in the confidence aspect, and 100% in the satisfaction aspect.

From the three learning activities carried out, it is known that the level of student motivation is increasing. This is because lecturers always provide an introduction to motivational sentences and appreciation for students who want to participate in providing comments, criticisms, answers, and suggestions in the learning process. Based on the three meetings mentioned above, it can be concluded that student's motivation in the learning process is described in Figure 2.

Table 4. Percentage of Motivational Observations on Learning 3

Metting	Indicator	Average Percentage	Total Average	Category
III	Attention	94,27	96	Very good
	Relevance	93,75		
	Confidence	96,88		
	Satisfaction	100		
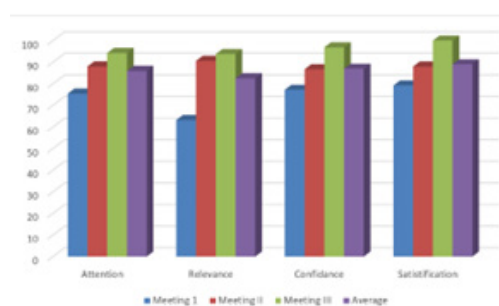
Figure 2. Average Results of Student Motivation Questionnaires during the learning process 1-3

Figure 2 shows an increase in each element of motivation at meetings I, II, and III. On the attention aspect, there was an increase in student motivation by 13% from the first meeting to the second meeting and a rise of 6% from the second meeting to the third meeting. On the relevance aspect, there was an increase of 26% from meeting I to meeting II and 3% from meeting II to meeting III. On the element of self-confidence, there was an increase of 9% from the first to the second meeting and a 10% increase from the second to the third meeting. On the sanctification aspect, there was an increase of 9% from meeting I to meeting II and a 12% increase from meeting II to meeting III. Thus, every learning meeting has increased student motivation.

ARCS has specific categories and objectives in the context of learning motivation (Keller, 2010). ARCS concepts create strategies to stimulate and maintain learner motivation (Keller, 2010; Li & Keller, 2018). The attention stage aims to pay attention to students' interests and stimulate their curiosity to learn. The relevant aims are to fulfil students' needs/goals to produce a positive attitude. Confidence helps students believe/feel that they will succeed and control their success. Satisfaction can reinforce accomplishments with rewards (internal and external) (Keller, 2010).

The Flipped Classroom model takes theoretical learning outside the classroom, while time at school is for more interactive and collaborative activities (Aıksoy & Özdamlı, 2016; Baker, 2000; Hu et al., 2019). A flipped classroom encourages students› active participation in discussions, conducting, and practical exercises. When students personally prepare with material before class, they become better equipped to engage in deeper conversations, which at meetings generate a sense of engagement and enthusiasm.

Flipped Classroom Learning encourages students to take personal responsibility for learning outside the classroom. They build independence and discipline skills to manage their own time. PBL involves students searching for information and analysing independently to overcome problems (Agustina et al., 2017). This approach provides a sense of achievement and satisfaction because students feel they have an active role in their learning.

Furthermore, in Problem-Based Learning (PBL), students solve complex real-world problems. This process stimulates critical thinking and problem solving, giving learning clear meaning. A sense of responsibility for problem-solving triggers intrinsic motivation because students feel they have an active role in overcoming challenges.

The combination of Flipped Classroom and PBL can show success, such as creative solutions and deep understanding. The research results by (Damayanti et al., 2020) show that PBL and Flipped classes provide active learning and improve creative skills. Similar research (Yulianti et al., 2019) found that implementing the ARCS learning model increased students' learning motivation. Such success can increase students' self-confidence and satisfaction with their achievements, positively impacting their learning motivation. In other words, the application of this learning model has a significant impact on increasing learning motivation.

Using a combination of flipped classroom and PBL learning has increased student motivation. Apart from that, learning content related to before and after learning in class has a good impact on students. Students can identify material before, during, and complete understanding after learning. This process can make students show excellent learning activities with increased motivation at each meeting. Students with high learning motivation tend to understand the material and have satisfactory learning achievements, although sometimes only some things are like that, and it depends on other factors within the students themselves (Alfiyana et al., 2018; Yulianti et al., 2019).

In implementing the learning process in the classroom, students' learning motivation increases. According to the results of the student questionnaire, motivation increased by 3% to 13%. This improvement shows that the efforts made in the second learning significantly affect learning, such as giving ice breaking in jargon and happy gymnastics, dramatically affecting student learning motivation. Giving apperception with the delivery of learning objectives also significantly affects learning motivation because, with this stage, students can think about what they want to achieve after studying this material. Based on the results obtained, we know that the application of the Flipped Classroom Learning Design Model and Problem-Based Learning in Open Distance Learning (PTJJ).

CONCLUSION

The following conclusions were obtained Based on the data analysis and research discussion. First, the combined learning design, combining the flipped classroom learning model and problem-based learning in open distance learning (PTJJ), is perfect and implemented according to the learning syntax. *Second*, applying *flipped classroom* learning design and *problem-based learning* is known to increase student learning motivation.

Then, there are two recommendations for further research. First, learning that applies the flipped classroom learning model and problem-based learning is an alternative to the learning process. Second, this research should be continued by applying it to other subjects, using a larger sample, and limiting the assessment aspect to cognitive. In the future, it is necessary to observe further the affective and psychomotor aspects.

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