Blended learning model based on portfolio and HOTS: How is it developed in LPTKs?

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ABSTRACT

During the covid-19 pandemic, learning can no longer be done directly. LPTKs are given the option to organize blended learning, a mixture of offline and online. The main problem is how to develop blended learning, which includes portfolio focus and HOTS? This is development research. The aim is to find, develop and validate a product produced during 2020/2021, even the semester lecture process. The resulting learning products can be in the form of lecture handouts, final assignments, and lecture textbooks resulting from the application of portfolio-based and HOTS-based blended learning models. The process to be carried out in the development of learning products includes 1) planning (preliminary studies, proposal making), 2) product development, 3) product trials and revisions, and 4) dissemination and utilization. The results of the discussion on the acquisition of existing data can be concluded that the blended, portfolio, and HOTS-based learning activities have been carried out smoothly and comprehensively. The implementation of blended learning can be seen in the discussion of online and offline lectures and offline lecture exams. The student activity portfolio is contained in lecture activities, individual and group assignments, and individual exams. HOTS content is contained in assignments individually and in groups.

INTRODUCTION

In the early 2000s, blended learning became the trend chosen by educators in conducting learning at schools/campuses. Blended learning was chosen as the answer to learning needs in education. Regarding blended learning, (Untari & Millatussa'adiyyah, 2020) emphasized that human relations which were initially only carried out directly (face-to-face), along with the development of science and technology, can be developed further through new patterns that are no longer direct. Then, (Hikmah & Chudzaifah, 2020) added that through the discovery of information technology, humans could communicate with other humans both individually and in groups without being limited by distance and time. Communication can be done directly in one network (online).

The online learning process is a necessity, where anyone can communicate quickly and directly (Kusuma & Hamidah, 2021). This communication pattern is relatively new and different from the old (conventional) offline pattern, where everyone can only communicate if it is done directly (Efivia, 2019). Offline learning is a learning system where humans can communicate directly in one particular room/place. These two learning models were initially separate according to each party's needs (Purnomo et al., 2016). However, along with the current need for the importance of communication between humans, communication patterns are no longer carried out using only one way (offline), but more than that, it must be combined with online needs. Moreover, with the Covid 19 pandemic, communication between humans has to be done remotely (indirectly) (Nurjanah et al., 2021). A pandemic for which there is no cure, for the time being, can be prevented by maintaining physical and social distance between humans. What is the impact on education? This field gets a tremendous impact, where the initially dominant learning activities are carried out face-to-face; due to this situation, it is no longer possible to do something like that. Affirmed by (Perdana & Adha, 2020),

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the learning process must be designed by prioritizing indirect communication in one particular room/place.

All parties who manage the education sector must redesign the implementation of learning (Gani & Saddam, 2020). The learning process can no longer be done face-to-face but must be done using the help of communication technology through various platforms. This situation then forced all parties to look for the best alternative in the implementation of learning. As a result, educators (teachers/lecturers) conducted online learning using various platforms for at least one semester.

The implementation of learning like this certainly has an accompaniment impact for the organizers. Various parties gave comments as a form of their impression of the implementation of the learning. A limited survey conducted by (Herianto, 2021b) on students at FKIP Universitas Mataram showed that from the lecturer's perspective, information was obtained that the online system made it difficult for them. The difficulties that exist generally lie in the lack of support for the internet network and the completeness of the material through online discussions. From the student side, information was obtained that the online system had a complex impact on their understanding of conceptual lecture material.

Various complaints resulting from online learning must immediately find the right solution. Several studies have been conducted to address the shortcomings of online learning. Studies conducted (Nuraini, 2020), (Amin, 2017), and (Bunimansyah, 2020) prove that the combination of online and online in the form of blended learning is the right solution in learning more so in this era of the Covid 19 pandemic. The implementation of blended learning is not carried out just like that. However, creativity is needed in developing portfolio-oriented learning based on high-order thinking skills (HOTS) to obtain learning outcomes optimally and comprehensively with the support of appropriate learning products. Based on the background of the problem, the main problem to be studied in this research is how to develop a portfolio-based and HOTS-based blended learning model in the Educational Personnel Education Institute (LPTK)?

LITERATURE REVIEW

Blended learning is an innovative effort made by educators to develop learning to provide meaning for students who take part in learning. In this case, learning occurs more meaningfully because of the diversity of learning resources obtained. This learning has at least a dimension that allows students to gain constructive meaning in learning (Idris, 2011) and (Herianto, 2021a).

Various parties have partially carried out several studies. However, the existing studies are not comprehensive, so the expected optimal and comprehensive learning outcomes cannot be obtained. Some of the studies in question, including studies conducted by (Idris, 2011), (Isyarotullatifah, 2019), and (Munzadi, 2018) show that this mode of learning provides a comprehensive experience for students by emphasizing the direct interaction of teachers and students (offline). Moreover, strengthened through the experience of communicating between teachers and students virtually (online). The study's final results improve students' motivation and learning outcomes (Adnan & Anwar, 2020). This study does not relate to using the portfolio approach and HOTS as a vehicle for developing students' high-level cognition through portfolios.

Another study conducted by (Sjukur, 2012) and (Wahyudi & Widodo, 2020) shows differences in learning motivation between students who are taught blended learning compared to students who are taught conventional learning. Another study conducted by (Susilawati et al., 2018) and (Untari & Millatussa’adiyyah, 2020) showed positive changes in students' motivation and independence in learning. This change in the final result positively contributes to improving learning outcomes (students). As with previous studies, this study relates the use of the portfolio approach and HOTS as a vehicle for developing students' high-level cognition through portfolios.

A study conducted by (Pangkey & Mongdong, 2019) shows evidence that the portfolio-based learning model has increased student learning participation and learning outcomes. However, this study has not explicitly stated offline, online, or blended learning conditions. Besides that, this study also does not express whether the level of student cognition it develops, including low, middle, or high order thinking skills. These shortcomings need to be followed up through this research as a follow-up study. On the other hand, (Noerwiyati, 2017) emphasizes that portfolio learning leads to multiple abilities and skills. The study results show that students get multi-level cognitive changes so that their learning outcomes are not focused on extended cognition.

Teachers have an important role in portfolio development (Alexiou & Parasekova, 2010) and (Kurnia et al., 2017). Through his role, the teacher can choose the right parts of the learning concept that can be developed in various ways. His study showed significant results in using portfolios on student learning outcomes. However, the study has not explicitly disclosed the learning mode used and the level of cognition developed for the students. Added by (Baris & Tosun, 2011), the portfolio-based learning model has positively impacted student learning outcomes.

Blended learning is closely related to the portfolio approach based on these dimensions. This learning provides opportunities for students to gain varied experiences. Offline and online modes are the main
construction of blended learning (Koraneekij & Khraisang, 2019) and (Robles, 2011). Through these two integrated learning modes, students develop their cognitive abilities comprehensively from various levels through varied works in the form of portfolios. The varied contents of the portfolio show the students’ habits in honing their cognition skills through a series of activities that can prevent student boredom in monotonous learning. Through the variations of the portfolio work, the teacher emphasizes developing students' abilities at a higher level of thinking as the main essence of learning in principle is to encourage students to develop their cognitive abilities to the highest level (Robles, 2012). If these three things (blended learning are developed using a portfolio basis with a focus on developing higher-order thinking skills (HOTS), then the expected learning outcomes can be optimal and comprehensive (Faravani, 2015) and (Barbosa & de Ávila Rodrigues, 2020).

This study was proposed to answer the need for the importance of blended learning associated with a portfolio containing HOTS so that learning outcomes can be obtained optimally and comprehensively. Through a study entitled development of a Portfolio-Based and HOTS Blended Learning Model at the Program Studi PPKn, the researcher offers a new element as a follow-up (answer) to the shortcomings of previous studies that were more parts that the impact on learning outcomes which is not as expected.

In particular, the novelty in this study appears in the research process developed through development research studies by paying attention to several learning products as supporting learning activities and at the same time becoming the final product of research. The process to be carried out in the development of learning products includes 1) planning (preliminary studies, proposal making), 2) product development, 3) product trials and revisions, and 4) dissemination and utilization. This process will produce new learning findings through designs, textbooks, and lecture assignment portfolios.

Previous research (Herianto et al., 2020) on Child Protection Patterns in Child-Friendly School Dimensions and (Herianto et al., 2021) on Character Education Development Model Based on Local Wisdom are essential foundations for developing innovative online and offline learning in education units. Both articles on this study have been published in the Mataram Journal of Social Economics and Humanities. The results of this study are expected to be the basis for further research in the Program Studi PPKn and academic units as users of research results in the study program.

**METHODS**

**Research Type**

This is development research. The aim is to find, develop and validate a product produced during the Odd Semester 2021/2022. The resulting learning products can be in the form of lecture handouts, final assignments, and lecture textbooks resulting from the application of portfolio and HOTS-based blended learning models (Gall et al., 2003) and (Sugiyono, 2019).

**Time, Place, and Source of Research Data**

This study lasted for six months for one semester. The research location is Program Studi PPKn, PIPS, FKIP, Universitas Mataram. Subjects and informants as sources of research are determined according to data needs provided that research subjects are parties who understand and are directly related to research problems (Barnawi & Darojat, 2017) and (Thomas, 2006).

**Research Stages, Research Data Analysis, and Achievement Indicators**

The stages of activities that will be passed during this research process include: 1) problem identification, 2) collecting data, 3) compiling a design result, 4) design validation process, 5) design improvement, 6) test results, 7) results revision, 8) trial use of results, 9) revision of results, and 10) creation of results universally (Gall et al., 2003) and (Sugiyono, 2019). From the whole series, it can briefly focus on the following stages: The process to be carried out in the development of learning products includes: 1) planning (preliminary studies, proposal making), 2) product development, 3) product trials and revisions, and 4) dissemination and utilization.

The data obtained from all stages of the activity will be analyzed qualitatively. Prior to data analysis, the accuracy of data acquisition was confirmed through triangulation (Moleong, 2017). The research data were obtained through interviews, observation, documentation, and focus group discussions with students, lecturers, Head of Study Programs, and administrative staff. The research data analysis was carried out qualitatively, including the stages of data collection, data reduction, data presentation, and concluding (Miles & Huberman, 1992).
RESULTS AND DISCUSSIONS

a. Overview of the Development of a Portfolio-Based Blended Learning Model and HOTS

Implementation of Blended Learning

Blended learning (BL) is held in the Odd Semester 2021/2022, in the Philosophy of Science (FI). It has two credits in the third semester. In that semester, there were five classes, namely 3A, 3B, 3C, 3D, and 3E, with details on the number of students (see table 1).

Table 1. Details of students taking FI’s in First Semester 2021/2022

<table>
<thead>
<tr>
<th>No.</th>
<th>Class</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3A</td>
<td>34</td>
</tr>
<tr>
<td>2</td>
<td>3B</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>3C</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>3D</td>
<td>31</td>
</tr>
<tr>
<td>5</td>
<td>3E</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>158</td>
</tr>
</tbody>
</table>

BL has been implemented during the Odd Semester 2021/2022 for this. BL practice is an intermittent mixture of online learning with classical online models and independent contextual learning both individually and in groups offline. In detail, the description of learning activities for one semester is contained in the Table 2.

Table 2. Learning activities of the FI’s for one semester.

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Blended Learning Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>2</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>3</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>4</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>5</td>
<td>Individual Contextual-Offline</td>
</tr>
<tr>
<td>6</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>7</td>
<td>Individual Contextual-Offline</td>
</tr>
<tr>
<td>8</td>
<td>Individual-Offline</td>
</tr>
<tr>
<td>9</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>10</td>
<td>Individual Contextual-Offline</td>
</tr>
<tr>
<td>11</td>
<td>Classical-Online</td>
</tr>
<tr>
<td>12</td>
<td>Individual Contextual-Offline</td>
</tr>
<tr>
<td>13-15</td>
<td>Contextual Group-Offline</td>
</tr>
<tr>
<td>16</td>
<td>Individual-Offline</td>
</tr>
</tbody>
</table>

Portfolio-Based Blended Learning

During one semester, FI’s was held for 16 meetings. During the meeting, the supervisory lecturer set 2 types of tasks, namely individual and group assignments. There are 11 individual assignments, and 1 group assignment is arranged in various ways. It is according to the character of each lecture material. The lecture uses a blended learning system with a portfolio base summarized in 11 individual assignments and 1 group assignment through this pattern. An overview of portfolio-based blended learning implementation can be found in HOTS-Based Blended Learning.

All learning activities are developed with higher-order thinking skills (HOTS). The orientation of students’ cognitive abilities is based on the taxonomy developed by (Kratwokohl, 2002). According to them, students’ thinking skills include analyzing, evaluating, and creating. It appears that the implementation of HOTS is in blended learning. HOTS is held in assignment and exam activities. Individual and group assignments take place on offline learning. At the same time, the exam takes place offline.

b. Learning Products Obtained through the Development of Portfolio-Based and HOTS Blended Learning Models

One of the products of this research is the Philosophy of Science Textbook. An essential part of this book consists of Description, Textbook Content Summary, and Table of Contents. This book is used for learning in one semester (Herianto, 2021a). A brief description of the crucial parts of the book, including:

Description

It is a vehicle for students to discuss in depth the scope of the philosophy of science, challenges and the future of science, the nature of knowledge, scientific truth. Ontology is the nature of science, and epistemology is how to gain knowledge. Axiology is the value of the usefulness of science, the structure of science, and scientific means. It is also related to the benefits of the Philosophy of Science for the development of Civics learning. Students prepare a final project in the form of creative work on the benefits of Philosophy of Science for the development of Civics learning which is consulted through independent/individual clinical activities. Lectures are conducted online via Google Classroom (GC), WhatsApp Group (WAG), Zoom Meeting, discussions, and assignments. Evaluation is carried out in writing, documentation of involvement/activities during lectures and Final Project results.

Summary of Textbook Content

The textbook is organized into two parts: the first and second. The first part is the Introduction, which includes Descriptions and Textbook Content Summary. Description contains the scope of and the primary materials that will be discussed during one semester (16 meetings). The Summary contains an outline of the textbook’s overall development from the Handout. The second part of this book is the content, consisting of 4 chapters, namely: Chapter I Introduction, covering: Introduction, Scope of Philosophy of Science, Challenges, and Future of Science, and The Nature of Knowledge, Scientific Truth. Chapter II, The Main Pillars of Philosophy of Science in Civics, include-

c. Supporting Factors and Challenges in the Development of Portfolio-Based Blended Learning Models and HOTS

Supporting Factors

Several things support the development of portfolio-based and HOTS-based BL models. Lectures can take place simultaneously at the same time and are attended by all students who come from different places of residence. Student enthusiasm in attending lectures on time and abundant references from various sources, so lecturers and students find it easy to obtain them.

Challenge Factor

There are challenges in developing a portfolio and HOTS-based BL models. First, some students have limited ability to understand the content of online lectures. It has an impact on the low acquisition of learning outcomes. Second, some students are less concerned about implementing online lectures, so they are left behind discussing lecture content. Third, some students do not understand the instructions for assignments and exams, so their work results are not optimal. Fourth, some students have difficulty getting internet access for online learning; as a result, they experience being left behind in discussing lecture content. These challenges have resulted in students getting learning outcomes that have not been optimal.

d. The follow-up to the Development of Portfolio-Based Blended Learning Models and HOTS

Online learning is a necessity. Moreover, along with the current era of the industrial revolution, access and communication between people are not limited to offline only, but more often dominate the online activity factor (Catone & Diana, 2017). Therefore, when the Covid-19 Pandemic ends, and humans usually switch to offline communication, the need for online communication cannot be left alone (Fuady et al., 2021). The experience gained through the implementation of portfolio-based and HOTS-based BL at FI's proves that access to blended learning based on portfolios and HOTS has provided a new nuance for both teachers and students. The results of interviews with lecturers and students regarding their responses to the pattern learning are as follows:

"Blend teaching gives a new nuance in learning activities. Especially when learning online, at first, we are not used to making learning activities feel less smooth. However, over time, I as a lecturer feel comfortable to do so. Likewise, the level of student enthusiasm has increased from time to time" (Interview with EH on October 20, 2021).

"Even though it was quite difficult to learn blended at first, especially online, I was finally able to take this blended, online or offline, I finally felt used to it and it was easy to adapt" (Interview with MH on October 10, 2021).

"BL is an interesting lesson, so hopefully future s lecturers will continue to use it. Even though the learning atmosphere will be normal, BL should continue to run. Lecturers use both (online and offline) to teach s in the coming semester" (Interview with KW on October 20, 2021).

Based on the results of interviews with FI lecturers and several student representatives, it appears that portfolio-based BL and HOTS are models of learning approaches that should be maintained. For this reason, the recommendations submitted to LPTKs so that in the coming semesters, BL can be developed in others, as follows: LPTKs give freedom to supervisors to use an approach model that is by real needs in the era of the industrial revolution 4.0. LPTKs prepare more adequate internet network facilities to run online learning optimally. LPTKs can accommodate the results of this research by conveying information about portfolio-based and HOTS-based BL models. LPTKs assist researchers in disseminating the results of this research so that portfolio-based and HOTS-based BL models can be used in various relevant subjects.

This research provides a new nuance in lecture activities in the LPTK. Lecturers who develop s are encouraged to strengthen students’ mastery of lecture content with various models of portfolio-based lecture activities. The contents of the activities are HOTS nuanced so that students are motivated to develop in-depth and comprehensive thinking skills. All activities are packaged in an online and offline learning frame. This learning model had never been implemented before the Covid-19 pandemic. During the Covid-19 outbreak, supervisors were encouraged to carry out creative activities by utilizing all kinds of learning platforms that allow optimal learning.
use of the learning platform must be designed to allow students to develop their thinking skills highly in the context of varied activities.

The findings of this study have provided a new nuance in the development of lectures in the classroom. Through this new pattern, lecturers and students are challenged to organize lectures optimally with optimal learning outcomes. Based on these findings, the researcher proposes suggestions to the Civics Study Program to provide the broadest possible opportunities for supervisors in conducting lectures in a composite frame using portfolio and HOTS patterns.

It is realized that this finding still needs to be continued with other developmental. A relatively dynamic model is obtained and is following the latest development needs. We need attention in the following study to deepen the extent to which students are interested in using technology to master lecture material by considering various models of learning approaches. Students need to do collaboratively in completing group assignments. Students need high-order thinking skills of analysis, evaluation, and creating to-do activity independently and confidence as future teacher candidates.

CONCLUSIONS

Based on the whole series of this research, it can be concluded that the entire research planning can be implemented well. All the data needed in the research can be collected comprehensively. The results of the discussion on the acquisition of existing data can be concluded that the blended, portfolio, and HOTS-based learning activities have been carried out smoothly and comprehensively. The implementation of blended learning can be seen in the discussion of online and offline lectures and offline lecture exams. The student activity portfolio is contained in lecture activities, individual and group assignments, and individual exams. HOTS content is contained in assignments individually and groups and individual exams. The inhibiting factor for this lecture can be seen in the disruption of the internet network when it rains, and the power is cut. In addition, some students still have problems mastering lecture material abstractly through online lecture discussions. Supervisors use independent assignments offline to overcome this obstacle in individual assignments. This pattern helps students master abstract concept material with the help of contextual observations of learning activities in the education unit. The driving factor for lectures is students' enthusiasm, especially in the contextual discussion of lectures on individual and group field studies. This pattern helps students overcome obstacles in mastering abstract concepts through factual and contextual field studies.

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Author's Contributions

All team members contributed equally in the writing of this article. They carry out collaborative activities according to the tasks and functions that have been mutually agreed upon, from research planning to writing articles for journals.

Conflict of Interest

All authors in this manuscript have no conflict of interest. All team members work professionally according to their expertise.

REFERENCES


