Al-Ishlah: Jurnal Pendidikan
Vol.14, 2 (June, 2022), pp. 1633-1644
ISSN: 2087-9490 EISSN: 2597-940X, DOI: 10.35445/alishlah.v14i1.1368

Information System Design for Monitoring and Evaluation of Learning on Blended Learning

Nurliana Nasution[1], Yuvi Darmayunata[2], Sri Wahyuni[3]

1 Universitas Lancang Kuning; Indonesia; nurliananst@unilak.ac.id
2 Universitas Lancang Kuning; Indonesia; yuvidarmayunata@unilak.ac.id
3 Universitas Lancang Kuning; Indonesia; sriwahyuni91@unilak.ac.id

ARTICLE INFO

Keywords:

Information System Design;
Monitoring and Evaluation of learning;
Blended Learning

Article history:

Received 2022-01-10
Revised 2022-03-09
Accepted 2022-05-18

ABSTRACT

The Pandemic Covid-19 necessitates all activities to be network-based, including the collegiate learning process. Prior to the epidemic, instructors were mechanically or face-to-face evaluated for their learning. Monitoring and evaluation, on the other hand, are carried out online during the e-learning learning process. However, in the learning process through e-learning, monitoring and evaluation are carried out online. To facilitate the monitoring and evaluation of online learning by lecturers, it is necessary to build a web-based information system. The purpose of the research is the creation of an information system for monitoring and evaluating learning evaluation through blended learning. The research methodology used is a research and development research design using waterfall analysis with the stages of requirements analysis, system design, implementation, Integration and testing, operation and maintenance. The object-oriented research target is the monitoring and evaluation assessment information system. The result of the research is the development of an application for monitoring and evaluating learning assessment there are: (1) Using the system, the monitoring and evaluation of learning carried out by the monitoring and evaluation team can be easily carried out during the evaluation process. (2) The system can display a description of the results of the evaluation of learning monitoring and evaluation, (3) The system developed is used at the college for monitoring and evaluating learning activities through blended learning.

Corresponding Author:
Sri Wahyuni
Universitas Lancang Kuning: Indonesia; sriwahyuni91@unilak.ac.id

1. INTRODUCTION

The pandemic of Corona Virus Disease (Covid-19) has had a significant impact on learning activities. A University in Riau has also issued a Policy on the Implementation of Learning Activities for the Prevention of the Spread of Corona Virus Disease-19 (Covid-19), which is described in Practical Instructions for Learning through Blended Learning at the college. The Chancellor's Circular that has been issued continues to refer to the Ministry of Education and Culture's mission through the pillars of Education, which include availability, affordability, quality and relevance, equality, and learning certainty. COVID-19, even when learning returns to the physical classroom, the trend toward blended learning will continue. In this chapter, the authors explore how eLearning has evolved toward blended learning and how we can use modern technologies like artificial intelligence and learning models such as microlearning and spaced learning to improve blended learning.

As part of the "capacity building" approach in LSP, it is hoped that both evidence-based knowledge from other relevant research projects/topics, as well as the results of quantitative and qualitative research activities related to the project, will be used to create a more evidence-informed practice for all leaders and pedagogical staff in schools and kindergartens. The goal here is to build practice on 'what research already shows works' and where impact from own practice is shown in various ways (Tsai, Chao, Lin & Cheng, 2018). A big challenge though is to how an evidence-informed practice is actually created as it is not sure at all that new knowledge is automatically translated into the school or kindergarten (Hasan & Nasution, 2018). Another challenge is to ensure that both frames and content for the competency development of the pedagogical professions are working towards finding new methods and ways of organizing the professional "capacity building" of the project which ensures transfer between education and work (Allan, 2007). In the didactic design of the pedagogical interventions connected to FLiK we bring both our own experiences running the biggest research-based school development project in Denmark, with more than 500 schools and 29400 teachers and results from the qualitative research connected to this (Frumkin, Mimirinis, Dimitrova, & Murphy, 2004). The Danish project involved among others different designs of team-based competency development based on e-learning or blended learning

Monitoring and evaluating learning through blended learning during the COVID-19 pandemic is critical for identifying problems and ensuring that the implementation of learning through blended learning is carried out in accordance with the quality assurance of the online learning process. Monitoring and evaluating blended learning is an activity as well as an effort to carry out supervision and control in relation to the rules, standards, and guidelines for implementing blended learning that have been regulated/stated on learning quality assurance (Tsai, Chao, Lin & Cheng, 2018).

Monitoring is defined as a cycle of activities that includes collecting, reorganizing, reporting, and acting on information on a process that is being implemented (Corps, 2005). Generally, monitoring is used in checking between performance and predetermined targets. Monitoring of the relationship to performance management is an integrated process to ensure that processes are running according to plan (on the track). Monitoring can provide information on the continuity of the process to determine steps towards improvement that will be carried out. In practice, monitoring is carried out while a process is in progress. The monitoring system study level refers to activity per activity in a department (Sulaeman & Permana, 2021), for example, the activity of ordering goods from suppliers by the purchasing department.

The indicator that becomes the reference for monitoring is the output per process/per activity without evaluation, so it will not be known how the evaluation conditions are in the design, as well as the results. evaluation has become a vocabulary in Indonesian, but this word is an absorption word from English, namely evaluation which means assessment or assessment (Collins & Bahar, 2000). Meanwhile, according to the understanding of the term monitoring, that is knowing the state of an object by using an instrument and the results are compared to evaluation (Sulaeman & Permana, 2021).The understanding of the meaning of evaluation can vary according to the various definitions of evaluation by evaluation experts. According to Stufflebeam in (Irving, Adrianto, Kalikoski, Yunanda, 2009), the process of describing, obtaining, and providing useful information for assessing alternative

decisions, "Evaluation is a process of describing, obtaining, and presenting information that is useful for formulating an alternative decision.

Based on research result of (Lababa, 2018), Worthen and Sanders define the price (worth). something of value can be in the form of information about a program. Based on trials and evaluations of the Monitoring and Evaluation Application for Facilities and Infrastructure Development in the facilities and infrastructure development section of the Surabaya City Transportation Service, it can be concluded that the application can simplify the tasks of the Field Supervisor by processing the results of physical progress in the field and obtaining the results of monitoring the work plan and progress of physical work, evaluation results.

Monitoring and evaluation of learning through blended learning at college is carried out by the Center for Information Technology and Learning (PTIP). PTIP carries out learning monitoring and evaluation activities through blended learning in order to fulfill the quality assurance process which aims to fulfill the National Education Standards as set forth in the Minister of Education and Culture Regulation No. 62 of 2016 (Sitepu & Lestari, 2018), (Abdillah, 2016) The College Blended Learning Implementation Policy.

Blended learning is one of the latest educational issues in the development of globalization and technology. Many institutions or practitioners who have developed and give definition to their own language, according to the typology of the practice of blended learning itself. According to (Andrian & Rusman, 2019) that Blended Learning as a combination of the characteristics of traditional learning and electronic learning environments or Blended Learning, by combining such as web-based learning, video streaming, synchronous audio communication, and asynchronous with traditional face-to-face learning.

It can be concluded, simply that blended learning is said to be a combination or amalgamation of various aspects including web-based learning, video streaming, audio, and communication with traditional learning systems and includes methods, learning theories, and pedagogic dimensions. According to Government Regulation No. 39 of (IPDN, 2011), it is stated that monitoring is an activity to carefully observe a situation or condition, including certain behaviors or activities, with the aim that all input data or information obtained from these observations can be serve as the basis for making decisions on the next necessary actions. This action is necessary if the results of observations indicate that there are things or conditions that are not in accordance with what was originally planned, (Purwanti Masruchin; Wisaksono, Arief; Nurbaya, Syarifa Ramadani, 2020)

In carrying out the assessment, it is necessary to build a web-based information system to facilitate the team in conducting online assessments of the learning process carried out by lecturers through blended learning at the University. Based on this, it is necessary to design an information system for monitoring assessment and evaluation of learning through blended learning. The research conducted by (Utomo A.Y.; Purnamasari, Iin; Amaruddin, Hidar, 2021) with the title Design and Build of a Public Works Monitoring Information System with a Result Value Concept Approach. This research is based on the number of work projects carried out in each field, of course it will be very inefficient both in terms of time and cost when reporting progress and work results to the leadership. Therefore, a system is built that can make it easier for employees and leaders to carry out their duties. With this system, it can improve the work efficiency of employees in reporting the progress of project work.

Based on these problems, the purpose of this research is to create a web-based learning evaluation and monitoring assessment system. It is hoped that the learning that has been carried out by lecturers during the Covid-19 pandemic can be evaluated as well as an innovation in learning that has never been done by previous researchers.

2. METHODS

Implementation of the research refers to the cycle of software development software such as McCormick's waterfall models:

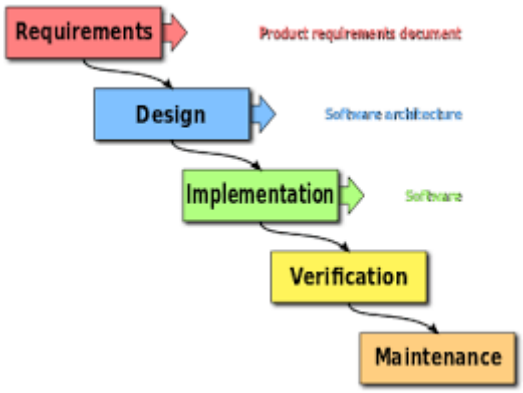


Figure 1. McCormick's Waterfall Model

This research employs development research using the Waterfall model method, (McCormick, 2012). With the following stages: (1) Requirements Analysis: All software requirements are obtained in this phase, including the expected utility of the software and software constraints. This information can usually be obtained through interviews, surveys or discussions, (2) System Design: This stage is carried out before the coding system stage. This stage aims to provide an overview of what the system will be like and how the interface for each activity will be. This stage helps in specifying hardware and system requirements and defines the overall system architecture, (3) Implementation: At this stage, the programming stage is carried out. Software development is broken down into small modules which will be combined in the next stage. In addition, at this stage an inspection is also carried out on the module that has been made, whether it has fulfilled the desired function or not. (4) Integration & Testing: At this stage, the modules that have been created are combined and tested to determine whether the software is in accordance with the design or not. (5) Operation & Maintenance: This is the last stage in the waterfall model. Software that has been finished, run and carried out maintenance. Maintenance includes fixing errors not found in the previous step

This research was carried out in the 2021/2022 academic year at the University. With object - oriented research targets . In the preparation of the monitoring and evaluation instrument, the basic activity menus in the blended learning are: Learning Implementation Plan (RPS), Lecture Implementation Time, Student Assignments, Learning Materials and Media, Mid-Semester Exams, Final Semester Exams, Discussion Rooms / Feedback Forms Flip, and Question Bank. This is then reduced to sub-indicators and items in the online learning monitoring and evaluation instrument. The total items contained in the instrument amounted to 17 items.

3. FINDINGS AND DISCUSSION

The monitoring and evaluation assessment web application is accessible via the website https://monev.unilak.ac.id. The user is an assessment team on the monitoring and evaluation of learning through blended learning. The structure and web design of the monitoring and evaluation assessment is described in part as follows.

Figure 2. Login Page

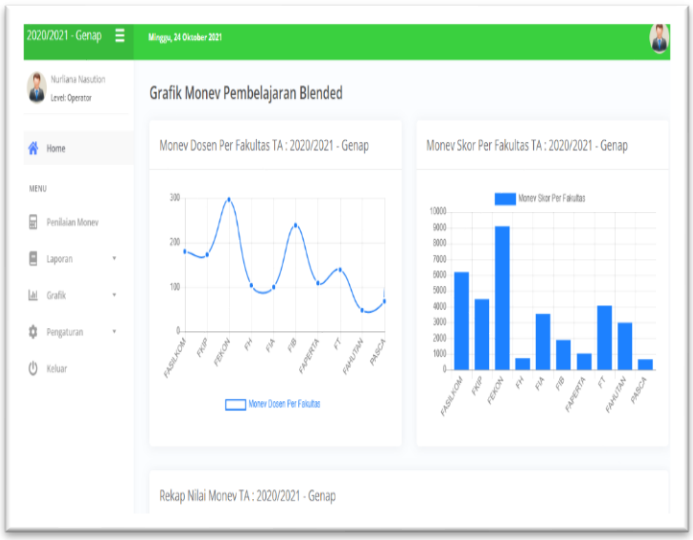


Figure 3. Site Home Page

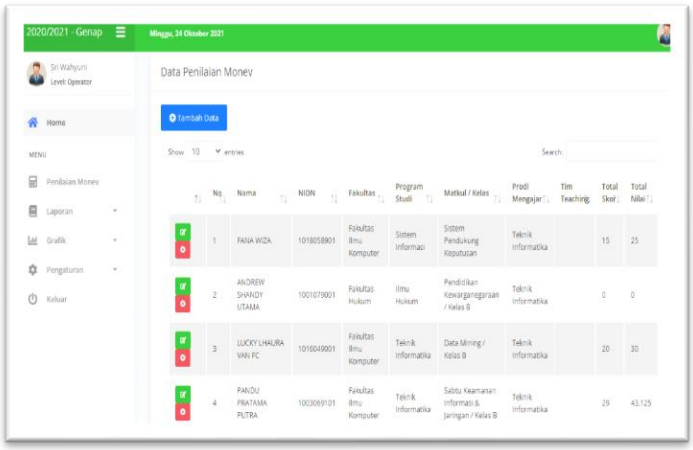


Figure 4. Menu Monitoring and evaluation

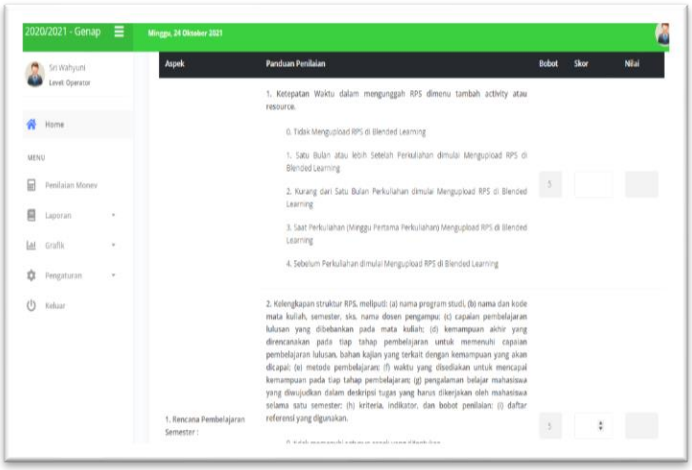


Figure 5. Input Value page

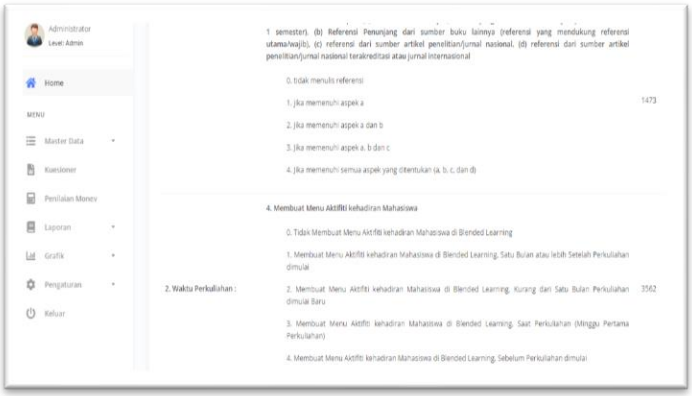


Figure 6. Monitoring Report page

The assessment is based on the following learning activities carried out by the college in blended learning:

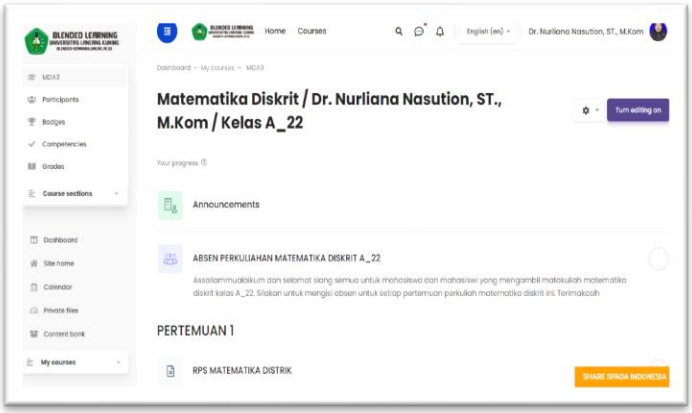
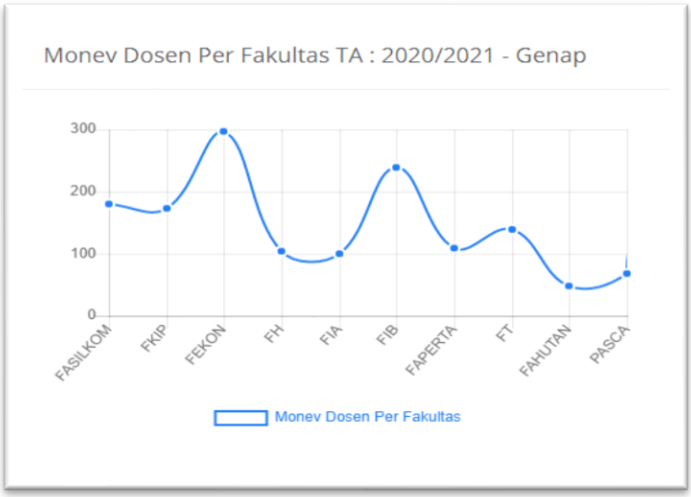


Figure 7. Course on Blended Learning



Figur 8. Report menu in Grafic

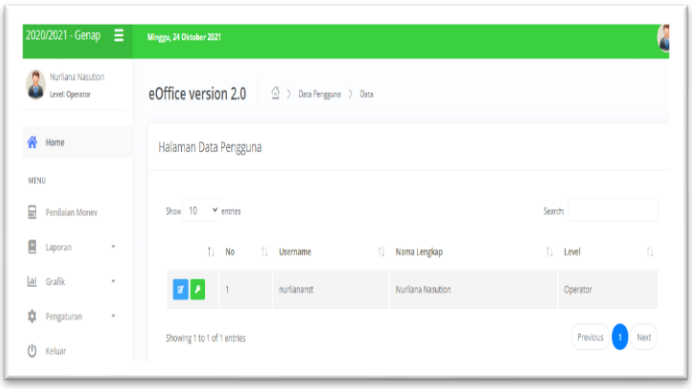


Figure 9. Setting

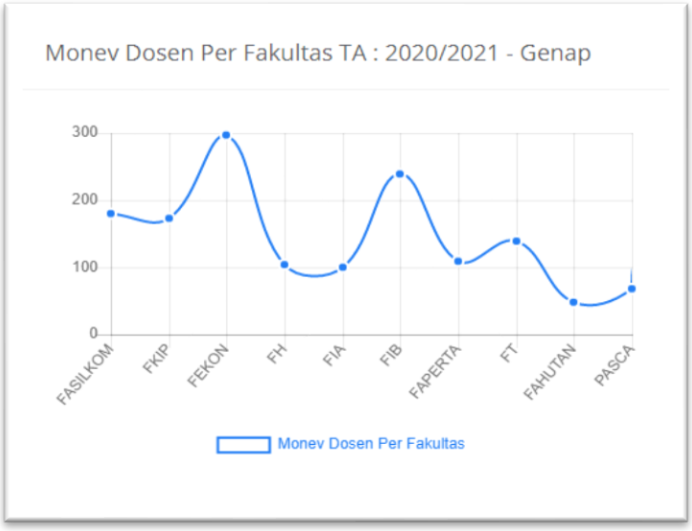


Figure 10. Graph of Monitoring and Evaluation Results Based on Statement Items or Components

The graph above explains that the highest component or the most in order to the lowest is as follows: Timeliness in uploading learning materials (5364), Lecturers upload learning material handouts: PPT, WORD, PDF, LINK (4760), Creating Student Attendance Activity Menus (3562), Recapitulation of attendance (2710), Adding the UTS Question activity menu at Unilak Blended learning (2563), Punctuality in uploading RPS in the added activity or resource menu (2433), Using video conferencing as a learning medium: zoom, jitsi, google meet and others (2400), Completeness of RPS

structure (257), Added UAS Question activity menu in Blended learning Unilak (2123), If you don't include media such as: video/audio/podcast/youtube video or link a link from google drive, or video self-made (1682), Writing references, including: (a) Main/mandatory references (references that are determined and serve as guidelines for 1 semester), (b) Supporting References from summaries other books (references that support the main/mandatory references), (c) references from research article sources/national journals, (d) references from sources of research articles/accredited national journals or international journals (1473), Adding task activity menus (1467), Discussion (Lecture Process/Submission of Material) through the Chat Activity menu/discussion forum at Blended learning UNILAK (1283), Giving UTS Scores in UNILAK Blended learning (565), Giving UAS scores in UNILAK blended learning (486), Making Banks Problem (371), Assignment of Values (352).

The monitoring and evaluation of learning on blended learning business process produces UML (Unified Modeling Language) diagrams for Usecase Diagrams, Activity Diagrams, and Sequence Diagrams.

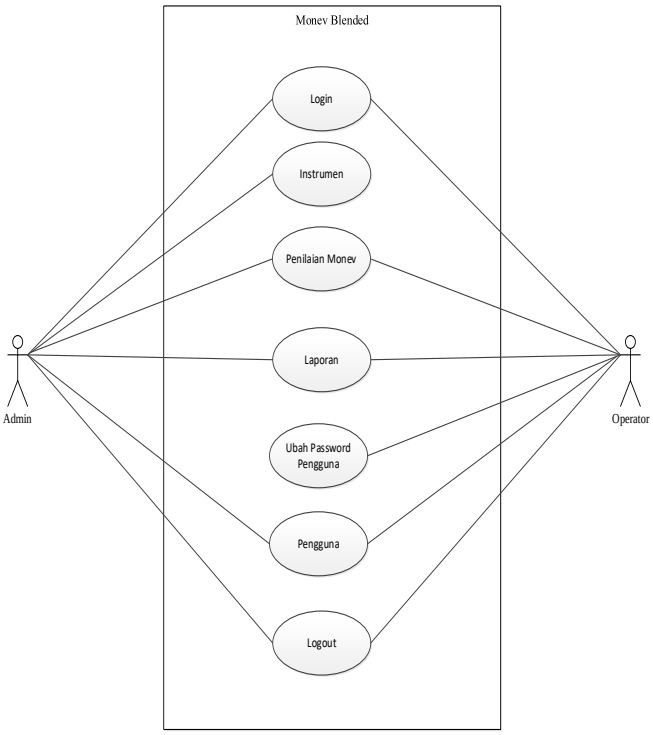


Figure 11. Usecase Diagram for Monitoring and evaluation

The diagram above describes users, namely admins and operators.

Table 1. Admin Usecase Scenarios

Actor	**Admin**
Aim	Monitoring
Description	Admin inputs instruments, conducts monitoring and evaluation, prints reports and adds and deletes users.
Actor Action	System Response

System login .	
	The system displays the main page.
Input instruments, conduct monitoring and evaluation, print reports and add and delete users.	The system stores data.
Pre-Conditions	Must be logged into the system with access level as admin.
Post-Conditions	The data has been successfully saved.

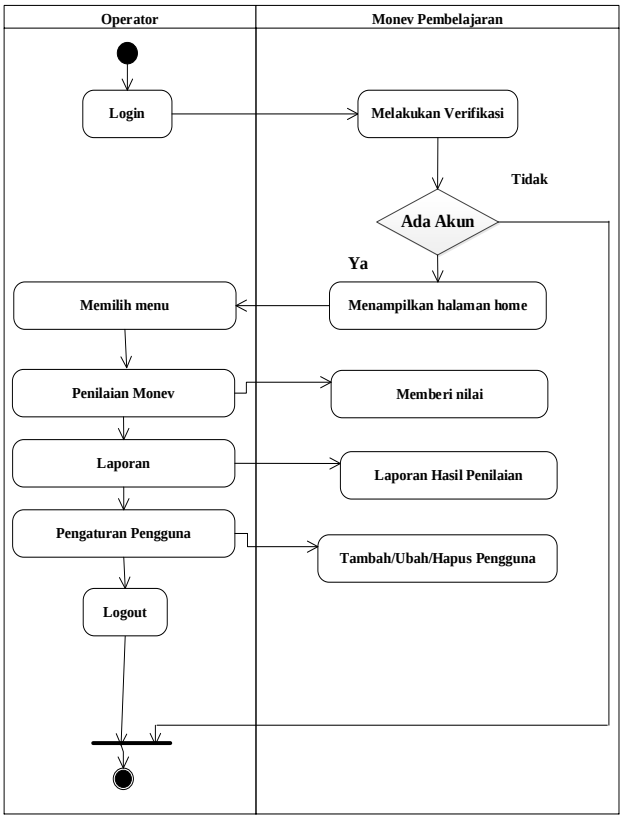


Figure 12. Activity Diagram Monev Learning for Operators

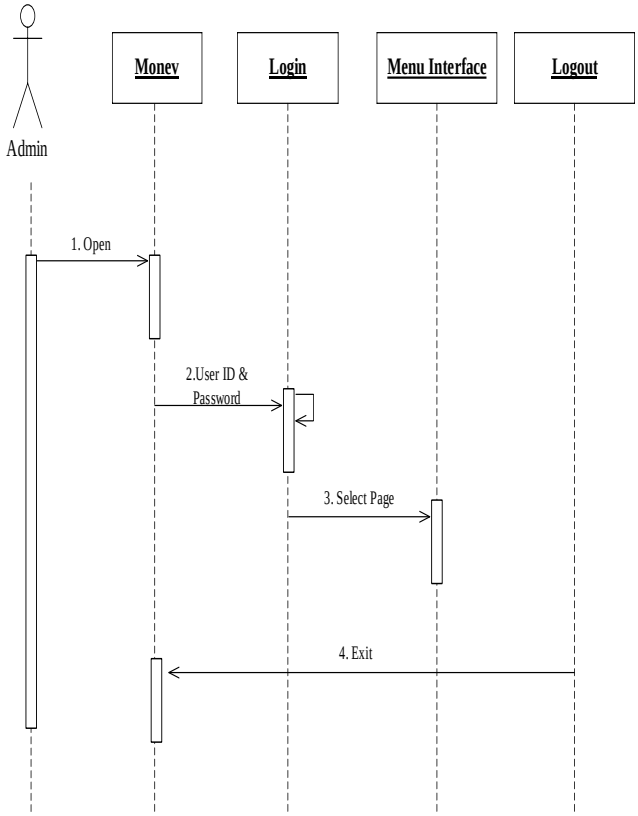


Figure 13. Sequence Diagram Monev Blended Learning

The researcher first compiled an assessment instrument as a material for web creation before designing the structure and web design. A team led by the Vice Chancellor monitors and evaluates learning through Unilak's blended learning. 1. Monev is aimed at assessing the implementation of blended learning by lecturers in all distributions of courses and classes in the Even semester of the 2020/2021 Academic Year. The instrument is designed as a component that can be used as a reference to assess the quality of learning through blended learning. Therefore, in the preparation of this instrument, the implementation of monitoring and evaluation of learning through Unilak blended learning was used. based on 8 components, namely: (1) Learning Implementation Plan, (2) Lecture Implementation Time. (3) Student Assignments, (4) Learning Materials and Media, (5) Mid-Semester Exam, (6) Final Semester Exam, (7) Discussion Room/ Feedback Form, (8) Question Bank.

With the development of blended learning, it has been widely applied in teaching process. However, in the context of blended learning, tutor are not easy to acquire learning process of students and to make good use of learner' behaviors records. Therefore, they cannot timely receive feedback and effectively perform evaluation based on traditional indicators and method. To address this problem, this paper applies learning analytics and studies the learning behavior records in blended learning, i.e., integrating learning analytics to construct an evaluation mode through the evaluation theory, types, subject, and applies the mode to the specific teaching practice. This can provide guidance for tutors and help them make better effective and objective evaluation, (Valiathan, 2002), (Graham, 2006), (Osguthorpe & Graham, 2003).

Research resulted of (Widada, 2017) in the design of an information system for monitoring and evaluating the learning process at the Industrial Engineering Study Program, Faculty of Engineering, Kadiri University in the form of online lecture journal filling services and data stored securely in the cloud. So that monitoring and evaluation activities can be more effective and efficient. Data processing uses data triangulation. The results showed that the difficulties in the form of (1) not all students have a device that supports learning, (2) difficulties in the network, and (3) difficulties in purchasing internet data packages, (Safi'i, 2017). Solving the problem of learning difficulties is to use the face-to-face method using a rolling system or alternately, at the time of face-to-face learning, students in the classroom may

not exceed sixteen and are carried out every two days. Second, with an online system, namely by taking turns face-to-face which is held every two days. Third, there must be internet data package assistance from the government to teachers and students to support learning during the COVID-19 pandemic, (Hadi Tukino; Fauzi, Ahmad, 2020).

The main thing used is a tool in the form of a web-based learning evaluation application resembling an application that can carry out evaluations related to a certain exam process as a trial during data entry training of all existing subjects by the teacher concerned with the authority as a teacher, scheduling and instructor arrangement by the principal, and finally student entry by the operator. Each application a different task according to its function, (Puspitawati Markhamah, 2021).

The basic activity menus in the blended learning were used in the preparation of the monitoring and evaluation instrument, namely : Learning Implementation Plans, Lecture Implementation Time, Student Assignments, Learning Materials and Media, Mid-Semester Exams, Final Semester Exams, Discussion Rooms/ Feedback Forms , and the Question Bank.

This component is further reduced to sub-indicators and items in the online learning monitoring and evaluation instrument. The total items contained in the instrument amounted to 17 items.

Table 2. Components and Items on the Instrument

No	Component	Weight
1	Learning Implementation Plan (RPS)	15
2	Lecture Implementation Time,	10
3	Student Assignments,	10
4	Learning Materials and Media,	30
5	Midterm exam,	10
6	Final exams,	10
7	Discussion Room/ Feedback Form,	10
8	Question Bank	5
Total		100

There are several frameworks for the implementation of online learning monitoring and evaluation that were developed by the development team for the Learning Monitoring and Evaluation Instrument through Unilak blended learning.

The monitoring and evaluation assessment web application can be accessed through the https://monev.unilak.ac.id website . The user is an assessment team on the monitoring and evaluation of learning through blended learning.

4. CONCLUSION

Based on the preceding discussion, the following conclusions can be drawn: (1) Using the system, the monitoring and evaluation of learning carried out by the monitoring and evaluation team can be easily carried out during the evaluation process. (2) The system can display a description of the results of the evaluation of learning monitoring and evaluation, (3) The system developed is used at the college for monitoring and evaluating learning activities through blended learning. The designed system still has flaws and limitations, so there are several things that need to be developed to improve it by developing a web system towards artificial intelligence. This is expected to change in the future.

REFERENCES

Abdillah, L. A. (2016). Standar Proses dan Penilaian Pembelajaran (Permenristekdikti No. 44 Tahun 2015 tentang Standar Nasional Pendidikan Tinggi). Weekly Monday Briefing.

Allan, B. (2007). Developing the best blend? From blended e-learning to blended learning. Library & Information Update, 6(3), 26–28.

Andrian, Y., & Rusman, R. (2019). Implementasi pembelajaran abad 21 dalam kurikulum 2013. Jurnal Penelitian Ilmu Pendidikan, 12(1), 14–23.

Collins, E. F., & Bahar, E. (2000). To know shame: Malu and its uses in Malay societies. Crossroads: An Interdisciplinary Journal of Southeast Asian Studies, 35–69.

Corps, M. (2005). Annual report on activities (2004). Report Submitted to the Government of Mongolia. Ulaanbaatar, Mongolia: Mercy Corps.

Frumkin, L., Mimirinis, M., Dimitrova, M., & Murphy, A. (2004). From e-learning to b-learning: how students use e-learning material in a blended learning environment. E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, 1870–1875. Association for the Advancement of Computing in Education (AACE).

Graham, C. R. (2006). Blended learning systems. The Handbook of Blended Learning: Global Perspectives, Local Designs, 1, 3–21.

Hadi Tukino; Fauzi, Ahmad, I. M. T. (2020). Sistem Informasi Monitoring Evaluasi Standar Pembelajaran Menggunakan Framework Codeigniter. Conference on Innovation and Application of Science and Technology (CIASTECH), (CIASTECH 2020 "Peranan Strategis Teknologi Dalam Kehidupan di Era New Normal"), 443–452. Retrieved from http://publishing-widyagama.ac.id/ejournal-v2/index.php/ciastech/article/view/1900/1340

Hasan, M. A., & Nasution, N. (2018). Rancang Bangun Aplikasi Pembuatan Web Blog Berbasis Web Menggunakan HTML5. INOVTEK Polbeng-Seri Informatika, 3(1), 68–72.

IPDN, G. S. T. A. T. (2011). Governor of South Sulawesi Will Not Prosecute IPDN. January.

Irving Hartoto, D., Adrianto, L., Kalikoski, D., & Yunanda, T. (2009). Building capacity for mainstreaming fisheries co-management in Indonesia.

Lababa, J. (2018). Analisis butir soal dengan teori tes klasik: Sebuah pengantar. Jurnal Ilmiah Iqra', 2(2).

McCormick, M. (2012). Waterfall vs. Agile methodology. MPCS, N/A.

Osguthorpe, R. T., & Graham, C. R. (2003). Blended learning environments: Definitions and directions. Quarterly Review of Distance Education, 4(3), 227–233.

Purwanti Masruchin; Wisaksono, Arief; Nurbaya, Syarifa Ramadani, Y. M. (2020). Pemanfaatan Aplikasi Evaluasi Belajar Berbasis Web Era Covid - 19. Berdikari: Jurnal Inovasi Dan Penerapan Ipteks, (Vol 8, No 2 (2020): August), 104–114. Retrieved from https://journal.umy.ac.id/index.php/berdikari/article/view/8888/5639

Puspitawati Markhamah, Y. M. (2021). Pola Materi Kebahasaan, Monitoring, dan Evaluasi Pembelajaran Bahasa pada Buku Tematik Sekolah Dasar Kelas 1. Jurnal Penelitian Humaniora, (Vol 22, No 2: Agustus 2021), 124–135. Retrieved from https://journals.ums.ac.id/index.php/humaniora/article/view/11388/6757

Safi'i, I. (2017). Perancangan Sistem Informasi Jurnal Perkuliahan Sebagai Upaya Monitoring dan Evaluasi Proses Pembelajaran (Studi Kasus : Prodi Teknik Industri Fakultas Teknik Universitas Kadiri). JATI UNIK : Jurnal Ilmiah Teknik Dan Manajemen Industri, (Vol 1, No 1 (2017): October), 1–10. Retrieved from http://ojs.unik-kediri.ac.id/index.php/jatiunik/article/view/64/pdf

Sitepu, B. P., & Lestari, I. (2018). Pelaksanaan rencana pembelajaran semester dalam proses pembelajaran di perguruan tinggi. Perspektif Ilmu Pendidikan, 32(1), 41–49.

Sulaeman, F. S., & Permana, I. H. (2021). Sistem Monitoring Penerapan Rencana Anggaran Biaya Berbasis Web. IKRA-ITH TEKNOLOGI: Jurnal Sains & Teknologi, 5(1), 24–31.

Tsai, Y.-Y., Chao, C.-M., Lin, H.-M., & Cheng, B.-W. (2018). Nursing staff intentions to continuously use a blended e-learning system from an integrative perspective. Quality & Quantity, 52(6), 2495–2513.

Utomo A.Y.; Purnamasari, Iin; Amaruddin, Hidar, K. D. S. (2021). Pemecahan Masalah Kesulitan Belajar Siswa pada Masa Pandemi Covid-19. MIMBAR PGSD Undiksha, (Vol 9, No 1 (2021)), 1–9. Retrieved from https://ejournal.undiksha.ac.id/index.php/JJPGSD/article/view/29923/18016

Valiathan, P. (2002). Blended learning models. Learning Circuits, 3(8), 50–59.

Widada, D. R. (2017). Sistem Informasi Monitoring Dan Evaluasi Belajar Siswa Berbasis Web Dan Sms Gateway Di Sdit Nurul Istiqlal Klaten. Jurnal Ilmiah SINUS, (Vol 15, No 1 (2017): Januari 2017). Retrieved from https://p3m.sinus.ac.id/jurnal/index.php/e-jurnal_SINUS/article/view/262/pdf