Proceedings of the 3rd UIN Imam Bonjol International Conference on Islamic Education
"Embracing Islamic Education Based Local Wisdom of Malay World on Society 5.0"
Padang, 14 - 15 October 2022
ISSN XXX-XXX-XXXX-XX-X

EVALUATION OF ROTATION MODEL ON THE LEARNING PROCESS IN INFORMATION ENGINEERING AND COMPUTER ENGINEERING PROGRAMS

Liza Efriyanti
Dosen Tetap Pascasarjana Prodi S2 Manajemen Pendidikan Islam,
UIN Sjech M. Djamil Djambek Bukittinggi
lizafamuth@gmail.com

ABSTRACT

In the condition that the spread of the Covid-19 virus is still not complete, the lecture process follows the health protocol in the form of social distancing to break the chain of the spread of this virus. The rotation model is one of the blended learning models that implements face-to-face and online combination lecture meetings by taking turns according to the agreement between the lecturer and the students. The period of applying the rotation model in lectures is seen by students and lecturers, where when teaching lecturers, they must be in two different rooms, namely offline (in class) and online. Then students in class in order to be able to present their papers they must also be offline and online, so it is necessary to evaluate the program for implementing this rotation model using the CIPP model. The output obtained will later provide an overview to policy makers on campus to be able to see whether this model is effectively applied both from the side of lecturers and students in terms of various things and the achievement of lecture objectives. In addition, this research also provides an overview of possible decisions from this model, whether it will be continued, discontinued, or revised with various suggestions for future improvements

Keywords: *program evaluation, rotating model, blended learning, covid-19, society 5.0*

A. INTRODUCTION

The learning process after COVID-19 in various regions of Indonesia depends on whether or not the number of people infected with COVID-19 is high. If the area is still high, then the learning process is carried out online, but if it is low, it is done offline. The online or offline learning policy is based on a circular letter from the local education office in collaboration with the COVID-19 task force in each agency. Given the spread of the COVID-19 virus with various variants, it has spread exponentially (Gibran et al., 2021).

In the odd semester of the 2021–2022 academic year, the learning process in universities, especially in the West Sumatra area, is still mostly implementing a blended learning system, meaning that the campus provides a limited number of students who study offline in class. On the island of Java and several other provinces in Indonesia, they are still implementing the online learning lecture process (P. G. Putri et al., 2022).

Based on the circular letter of the Chancellor of IAIN Bukittinggi for semesters 2 and 4 in the 2021/2022 academic year number B-3082.29/In.26/PP.00.9/12/2021 concerning

ISSN XXX-XXX-XXXX-XX-X

the implementation of PBM Even Semester FY 2021/2022 and also outlined in the circular letter of the Dean of FTIK IAIN Bukittinggi number: B-0102/In.26.1/PP.00.9/01/2022, in general, the percentage is 50% for online learning and 50% for face-to-face learning.

Blended learning is a combination of online and offline learning processes carried out at a certain time, with the system still doing offline learning in class and at other times carrying out the learning process online (Rachmah, 2019; Sari, 2021). The percentage of offline and online learning is regulated by each university or agency as outlined in the circular letter of the Chancellor or the head of an agency.

Technological advances in the era of the Industrial Revolution 4.0 and Culture Society 5.0 have resulted in the implementation of a blended learning process. In blended learning itself, there are various models that can be chosen. The types of blended learning type rotation models consist of station rotation models, lab rotation models, flipped classroom models, and individual rotation models (Sukma Perdana Prasetya, 2019). In the station rotation model, learning is carried out alternately online and offline in study groups. The study group can consist of all class members, or the lecturer can subdivide it into smaller study groups (Sari, 2021).

Based on the results of researchers' observations during these three months (August–October 2021) and the implementation of midterm examinations at several universities, it turns out that there are still many complaints from parents of students about the implementation of this rotation model, where when their children are not on the face-to-face schedule, there are still many of their children who use the time at home playing games, watching movies and videos on YouTube, and socializing with their friends, but not discussing course material, but rather discussing inappropriate things, and the language used tends to have negative connotations. Students themselves feel they still want learning that involves all other students being in the same class at the same time as their friends, on the grounds that they are more eager to go to campus and can joke and learn together with their friends.

Based on the results of researcher interviews during lectures in the third week of October 2021, the opinions of several lecturers stated that the midterm exam results obtained by students had decreased on average, and this also happened in several other

ISSN XXX-XXX-XXXX-XX-X

universities compared to the previous year. The lecturers also complained that double jobs occurred, the semester became longer than the predetermined time, and the costs incurred were also higher than when fully online in the previous semester. Some students conveyed the same thing as teachers: that their expenses were higher than the previous semester.

But from the other side, the researcher sees that with a limited number of students in the class, the lecturer's attention is more focused on each student, the attitude of students is easier to direct, and class management is maximized. From the results of interviews with lecturers, lecturers said that they knew the characteristics of their students better and that the relationship between lecturers and students was closer than before. Some students also said that they preferred learning as it is now; they felt more cared for by lecturers, and lectures in class felt like private lessons.

In previous semesters, some people started to worry about the risks that online learning might pose. Some of the risks include the threat of dropping out or taking a leave of absence. The economic situation during the pandemic often forces parents to involve their children in helping with family finances. Furthermore, there is a risk of inequality in children's learning achievement in Indonesia. This is due to the gap in supporting facilities in urban areas and remote areas for carrying out distance learning. The government is also concerned that prolonged loss of learning risks long-term learning, both cognitively and in character development. Other anticipated risks include psychosocial stress and the potential for domestic violence. The lack of interaction between children and lecturers, friends, and the outside environment can cause stress levels in the household for both parents and children. Without going to campus, many children are trapped in violence at home without being detected by lecturers (R. E. R. Putri et al., 2022; Belia Betari; Argitya Righo, 2020).

During online learning, students access the subject matter online. Lecturers can instruct what students should do not only to read course materials but also to work on skills, project assignments, or assess something based on guidelines or tutorials that have been previously provided online. Through this kind of online learning, students will have the opportunity to learn independently and free from pressure, especially when they have to present the learning outcomes to other students.

ISSN XXX-XXX-XXXX-XX-X

In offline activities, students learn directly face-to-face, as usual. The material taught can go directly to the next material or deepen the material through online learning. In this study, the authors evaluated the implementation of the rotation model in the lecture process at the PTIK study program, IAIN Bukittinggi, which has been running for two semesters and has conducted fully online lectures for one and a half years (from 2019 to mid-2021). The evaluation technique used is the CIPP (Context, Input, Process, and Product) method (Mufid, 2020). The CIPP method is used to help provide recommendations on whether this program should be continued, stopped, revised, or disseminated.

B. RESEARCH METHODS

In this research, the method used is evaluation research with mixed methods, meaning that there are qualitative and quantitative data (Nurhayani et al., 2022). The evaluation model used in this research is the CIPP evaluation model because this is a complex evaluation model that includes context, input, process, and product.

This research was conducted in the even semester of the 2021/2022 academic year from February 2022 to June 2022 and took place on the IAIN Bukittinggi campus at the Informatics and Computer Engineering Education Study Program, Faculty of Tarbiyah, and Teacher Training Sciences, which focused on evaluating the program implementation of the rotation model in semester 4 using the CIPP model.

The data used in this study are qualitative and quantitative. Quantitative data in this study were obtained from the results of distributing questionnaires to lecturers in the PTIK study program who taught in semester 5 and PTIK study program students in semester 5. While qualitative data were taken from researcher interview activities with research subjects. Data collection methods in this study are observation, interviews, distributing questionnaires, and documentation.

In tables 1 and 2, the population in the study was all 4th semester students in the Informatics and Computer Engineering Education Study Program Class of 2020. The research sample was taken from all population data. This is done with the intention of getting a representative sample.

Tabel 1. Populasi Mahasiswa Prodi PTIK
Semester 4 TA. 2021/2022

ISSN XXX-XXX-XXXX-XX-X

No.	Lokal	Jumlah Mahasiswa
1	PTIK 4A	32
2	PTIK 4B	32
3	PTIK 4C	35
4	PTIK 4D	32
Jumlah		131

(Sumber: TIPD IAIN Bukittinggi)

Tabel 2. Populasi Dosen Prodi PTIK
Semester 4 TA. 2021/2022

No.	Mata Kuliah Semester 4 Prodi PTIK	Jumlah Dosen
1	Bahasa Pemograman II (VB Net)*	1
2	Perancangan *Graphic* 3D	1
3	Media Pembelajaran TIK	1
4	Sistem Terdistribusi	1
5	Manajemen Pendidikan	1
6	Perencanaan Pengajaran TIK	1
7	Pengelolaan Kelas	1
8	Ilmu Hadist	1
9	Model dan Simulasi	1
10	Advance Database **	1
11	Statistik Pendidikan dan Probabilitas	1
Jumlah		11

(Sumber: Prodi PTIK FTIK IAIN Bukittinggi)

C. RESULTS AND DISCUSSION

ISSN XXX-XXX-XXXX-XX-X

Based on research that has been conducted by researchers during the even semester of the 2021/2022 academic year in the 4th semester of the PTIK Study Program, which is based on the policy of the Chancellor of IAIN Bukittinggi that all students studying in semesters 2 and 4 in the 2021/2022 academic year conduct lectures in a hybrid manner (online and offline learning simultaneously in the subject concerned), In its implementation, lecturers at IAIN Bukittinggi prefer the blended learning-type rotation model.

The implementation of learning in this rotation model has been carried out for 2 semesters (academic year 2021 in the odd and even semesters at this time), so it is necessary to conduct a program evaluation of the implementation of hybrid learning in IAIN Bukittinggi, especially in the PTIK Study Program and FTIK IAIN Bukittinggi, namely 4th semester students and lecturers who teach in the 4th semester. In this study, the research subjects were those involved in the rotation model learning process, namely, lecturers and students who were directly involved in the successful implementation of this rotation model.

Evaluation of the rotation model implementation program using the CIPP model The following results were obtained by researchers:

1. Content Phase

   Based on the circular letter of the Chancellor of IAIN Bukittinggi for semesters 2 and 4 in the 2021/2022 academic year number B-3082.29/In.26/PP.00.9/12/2021 concerning the implementation of PBM even semester FY 2021/2022 and also outlined in the circular letter of the Dean of FTIK IAIN Bukittinggi number: B-0102/In.26.1/PP.00.9/01/2022, in general, the percentage is 50% for online learning and 50% for face-to-face learning. The application of lectures that is suitable for the conditions of students and lecturers at IAIN Bukittinggi in the most possible lecture process is with a rotation system; for example, 50% of students study offline and the other 50% study online, and in the next meeting schedule they take turns. This is suitable for classes with a relatively large number of students. If the number of students in a class is small, it is possible for 100% of the students in the class to enter simultaneously. But not every day, because the other days are allotted for seniors or juniors who go to campus, especially for students who are in the sixth semester and above and have full offline (face-to-face) lecture activities. This is done in order to maintain social distance in the campus environment.

ISSN XXX-XXX-XXXX-XX-X

Some stages of hybrid learning and blended learning implementation include the following four stages (Verawati & Desprayoga, 2019): selection of a learning management system (LMS), development of a learning scheme, and making a learning agreement.

2. Input Phase

The implementation of the rotation model will certainly be greatly influenced by the conditions of the campus environment and the readiness of the available technology. IAIN Bukittinggi has a lecture building that is separated from one building to another and has a distance that is not so close to one another, which can be seen in Figure 1. The wifi network for each building has been facilitated by the campus, so that each lecturer simply enters their NIP to log in, and students simply enter their NIM to log in.

Figure 1. Distance and Position of Buildings within the Campus IAIN Bukittinggi

Wifi conditions sometimes experience problems if the weather is bad, such as strong winds or rain. This is also supported by the IAIN Bukittinggi campus environment, which is in a flat rice field environment, so that sometimes triggers a windstorm.

IAIN Bukittinggi Campus already has an information system with a link: http://e-campus.iainbukittinggi.ac.id, as shown in Figure 2.

ISSN XXX-XXX-XXXX-XX-X

Figure 2 Display of IAIN Bukittinggi Ecampus Information System

This ecampus information system has been developed and can be used for online learning by lecturers and students at IAIN Bukittinggi. Figure 3 shows that lecturers can create links to various applications used for synchronous online lectures via livestreaming (zoom, Meet Google, Jitsi, etc.), and students can later enter the lecture by simply clicking online at the lecture meeting that they will follow.

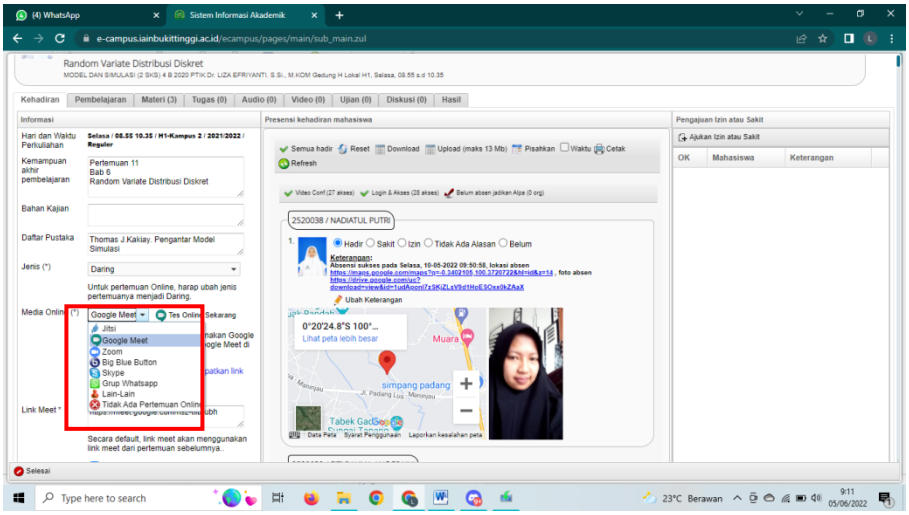


Figure 3 IAIN Bukittinggi Ecampus Supports Lectures Livestreaming

At the IAIN Bukittinggi ecampus, asynchronous lectures or livestreaming online can also be done. Lecturers can upload lecture materials or assignments to this system, either in the form of text, images, or videos, or video links on YouTube or other material links on the internet. This can be seen in Figure 4.

ISSN XXX-XXX-XXXX-XX-X

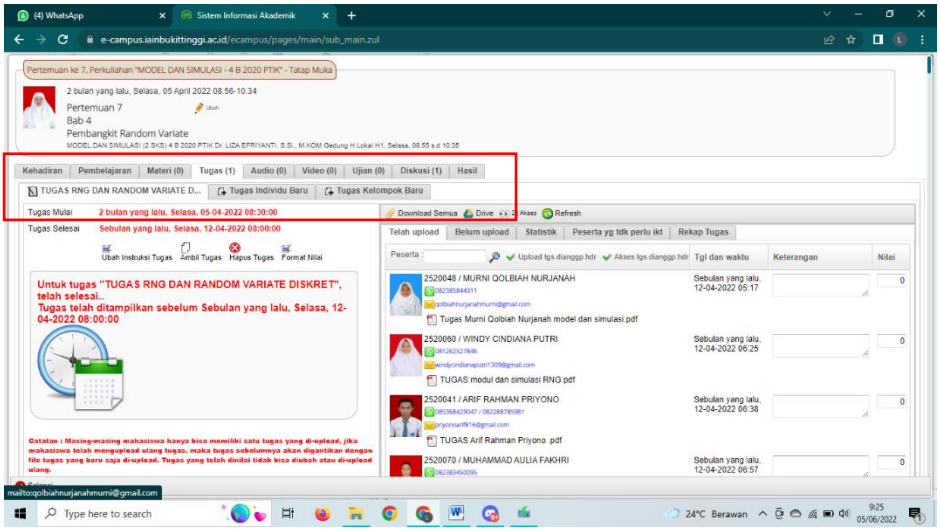
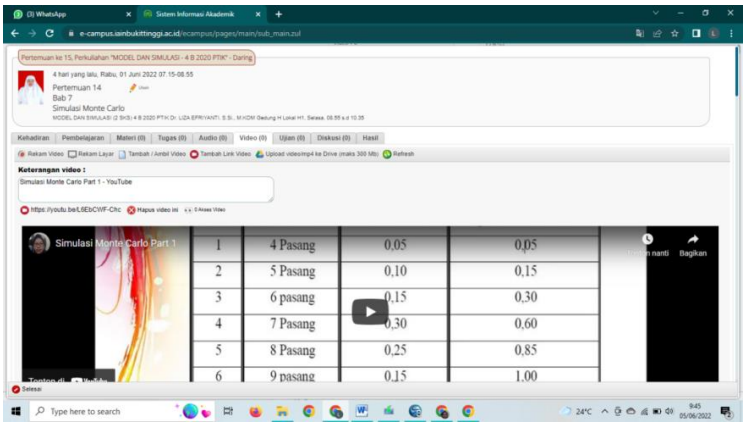


Figure 4 IAIN Bukittinggi's Ecampus Supports Online Lecturing Online Lectures that are Asynchronous

The readiness of lecturers in carrying out hybrid lectures in the even semester of the 2021/2022 academic year for second and fourth semester students, on average, especially in the PTIK study program, has prepared teaching materials in the form of lecture modules, video tutorials, and printed books related to lecture material and adjusted them to the RPS that has been designed by the lecturer, and this RPS has been approved by the Head of the Study Program, Head of the Science Group, and Lecturer in Charge of the Course before the lecture starts in the semester that will run. Usually, it has been submitted by the lecturer in charge of the course three weeks before the lecture is held. In Figure 5, one example of a video tutorial on YouTube lecture material can be inserted into the IAIN Bukittinggi ecampus according to the lecture meeting. In Figure 4.6, one of the materials is in the form of lecture modules that have been made by lecturers in the PTIK FTIK IAIN Bukittinggi Study Program.



ISSN XXX-XXX-XXXX-XX-X

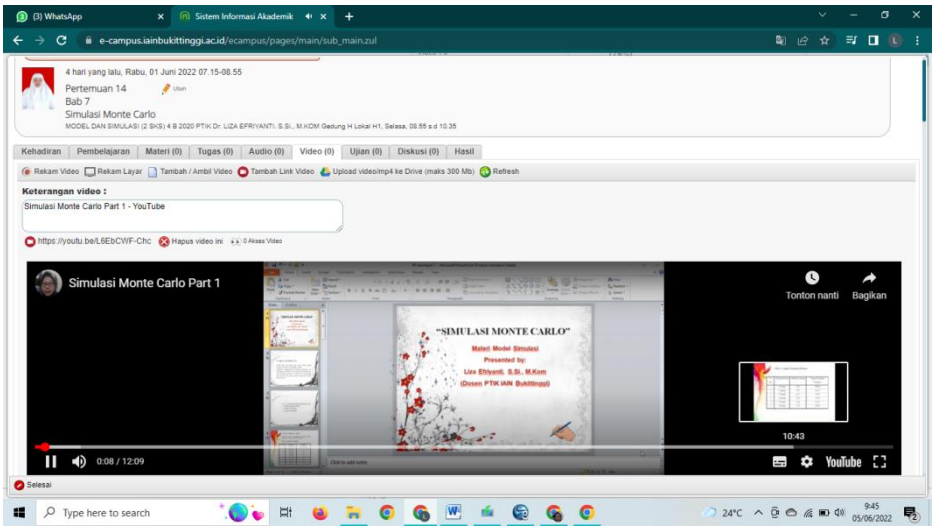


Figure 5 One example of a video tutorial on Youtube of lecturer material that has been entered into the IAIN Bukittinggi Ecampus.

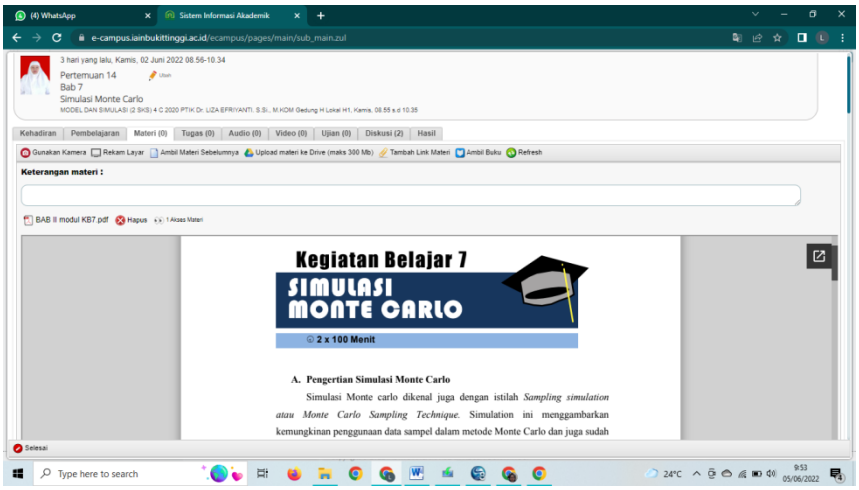


Figure 6. One of the materials in the form of lecture modules that have been made by lecturers in the PTIK Study Program.

Based on the results of interviews with lecturers, learning with a rotation model conducted by lecturers in the PTIK Study Program in the fourth semester combines offline and online meetings. The length of time offline on campus will also depend on the policies taken by the Chancellor of IAIN Bukittinggi, which are adjusted to local government instructions and also the COVID-19 Task Force report in the IAIN Bukittinggi environment. The number of students in a class will also be taken into consideration.

3. Process Phase

ISSN XXX-XXX-XXXX-XX-X

In this study, the researcher has a target respondent, which is 131 students who fill out the questionnaire. The results of this research questionnaire will be grouped into three parts: application of online learning, application of offline learning, and the rotation model.

There are 131 students who have filled out the questionnaire as research subjects. The researcher also conducted interviews with ten lecturers who teach in the 4th semester at IAIN Bukittinggi's PTIK Study Program and are spread across teaching in the 4th semester in PTIK 4A, 4B, 4C, and 4D. The interview was conducted smoothly on June 2, 2022.

a. Implementation of Online Learning
   1) Supporting Aspects of Online Learning

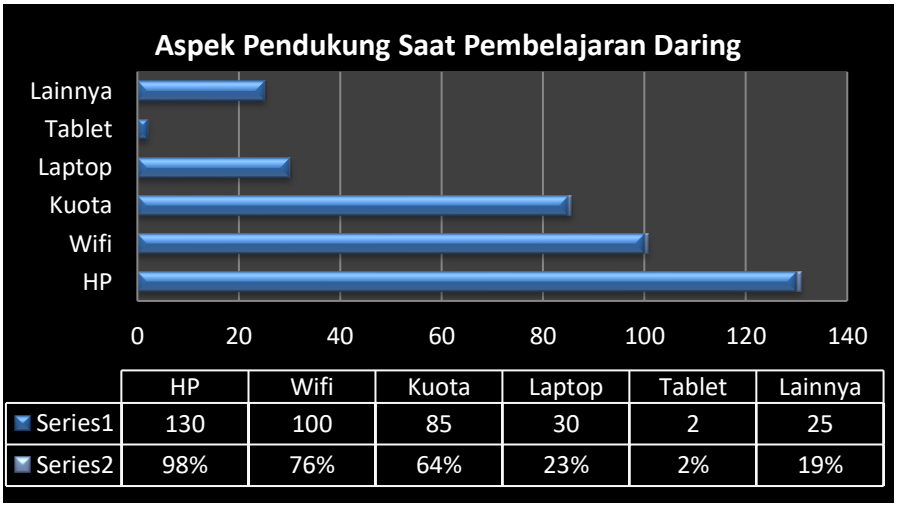


Figure 7: Diagram of Answers to Supporting Aspects of Online Learning

Based on Figure 7, the results of the questionnaire that researchers conducted regarding supporting aspects during online learning obtained data, namely that 98% answered cellphones as a supporting aspect during online learning. The acquisition of cellphone answers is the highest data point in supporting aspects of online learning. Then 76% answered WIFI, 64% answered quota, 23% answered laptop, 2% answered tablets, and 19% answered others. From the description of the questionnaire results regarding supporting aspects during online learning, it can be concluded that students in Prodi PTIK semester 4 use cellphones, laptops, WIFI, quotas, and tablets to support online learning. Students in Prodi PTIK semester 4 have used various kinds of supporting aspects during online learning, so it is hoped that online learning can run smoothly and without obstacles. Figure 8 shows the condition of lectures conducted by livestreaming via Meet Google by lecturers in Prodi PTIK semester 4 TA

ISSN XXX-XXX-XXXX-XX-X

2021/2022.

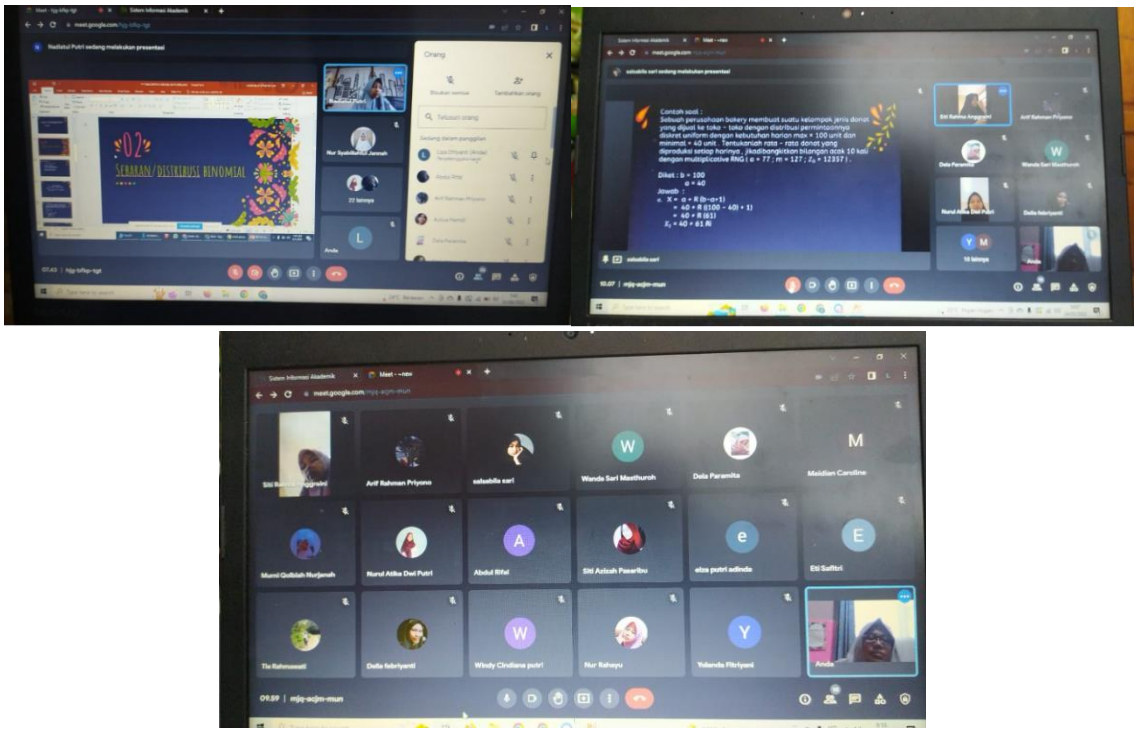


Figure 8. One of the Livestreaming Online Lecture Activities for 4th Semester PTIK Study Program Students FY. 2021/2022

1) Advantages of Online Learning

During this pandemic, students are required to do online learning to prevent the spread of the virus. This has an impact on education in Indonesia, where learning is usually carried out face-to-face. It is possible that there are many negative impacts that we encounter, especially for students and teachers to adapt as quickly as possible to new technologies in carrying out learning. However, online learning does not only have a negative impact but also a positive impact, which can certainly overcome learning problems that occur during a pandemic.

The results of the questionnaire that utilizes Google Forms about the positive impacts obtained by 4th semester PTIK Study Program students include, among others, that students are able to carry out learning at home, cost, or contract through applications and can directly explore technology so that it can increase students' technological literacy. Students can also recognize learning applications such as WhatsApp, Google Classroom, Google Meet, Zoom, and so on. With these applications, it is hoped that students can carry out learning that should be done offline. In addition, the next positive impact is that students can carry out casual learning at home, so helping parents can also be done well.

ISSN XXX-XXX-XXXX-XX-X

Students can also look for learning styles that are varied and suitable for their personalities so that they have no difficulty understanding learning and can learn anywhere, anytime, and with unlimited time.

2) Barriers to Online Learning

The results of the questionnaire filled out by fourth-semester PTIK Study Program students regarding obstacles during online learning take place, namely that most students complain about running out of quota during online learning, for example, when learning using the Zoom application because the application takes up a lot of quota. These obstacles can cause students to miss the material delivered by their lecturers. Another obstacle is that students experience signal difficulties when learning takes place, which can interfere with teaching and learning activities. In addition, there are also obstacles, namely lecturers who may not fill class hours because they forget and usually also teach in class at the same time as teaching students who do online learning as a substitute lecture when the previous session is constrained and unable to lecture because of other activities. These obstacles can have an impact on students who do online learning, so that they are not maximized in carrying out learning and are inefficient. In addition, online learning can also endanger health, as too frequent learning with cellphones or laptops can endanger vision because it can be exposed to radiation from the cellphone or laptop.

3) Understanding material during online learning

Perceptions from the results of the questionnaire of students in the fourth semester PTIK Study Program regarding understanding the material when online, namely 59% answered number 3, mean the level of understanding of students when implementing online learning is less likely to be understood. This answer is the most chosen by students, which indicates that their level of understanding during online learning is sufficient. Furthermore, 27% chose number 4 as the answer. The answer to number 4 means that the level of understanding of students is classified as good.

ISSN XXX-XXX-XXXX-XX-X

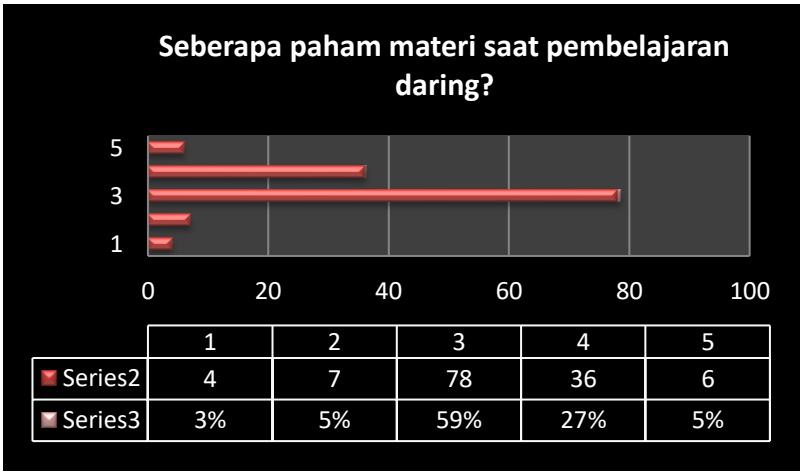


Figure 9: Percentage of student understanding during online learning

The level of understanding of students will also increase if, in the learning process, they are supervised by parents, seniors, or boarding house owners, because this supervision is useful in realizing good learning. Respondents who chose answer 2 were 5%. This indicates that there are 7 respondents who feel very poor at understanding the material during online learning. Furthermore, 3% chose answer number 1, which indicates that students feel that they do not understand the material taught during online learning.

Then the respondents who chose answer number 5 were 5%. With these results, it indicates that the level of understanding of students in the fourth semester PTIK Study Program when participating in online learning is classified as sufficient, which is more inclined towards understanding.

b. Offline Learning (Face-to-Face)

1) The advantages of face-to-face learning

After the pandemic period began to gradually improve, the PTIK Study Program in semester 4 ventured to start face-to-face learning, but not all students entered the campus area, so they implemented both online and face-to-face learning, or what can be called hybrid learning. The hybrid learning method is a combination of face-to-face instructional methods and online learning processes.
The benefits obtained by students during face-to-face learning are almost 75%, according to many student respondents who say that face-to-face learning has a very good impact on students, where students are able to

ISSN XXX-XXX-XXXX-XX-X

understand the material better than online, and besides that, students are able to socialize and interact directly with both their own friends and lecturers. During face-to-face learning, it is easier and faster to get a response when students do not understand the material taught by the teacher.

2) The Barriers Experienced During Face-to-Face Learning

According to the results of student respondents in the fourth semester of the PTIK Study Program, the level of understanding of material in students is very good during face-to-face learning, namely 96.2%.

Face-to-face learning There are approximately 60% of respondents who respond that there are no obstacles at all during face-to-face learning, as shown in Figure 10. The problems include, among others, students having to board in the Bukittinggi area for those who come from outside the city of Bukittinggi, but there are also students who travel back and forth (pp) who are in areas not far from campus, for example, the padang panjang area, baso, payakumbuh, balingka, koto tuo, sungai pua, and other areas. In addition, some conveyed the response that they were lazy because they had to wake up too early because, usually, during online learning, students wake up a little later.

There are also those who are a little awkward because they are meeting their friends for the first time after the pandemic. However, all these problems will gradually disappear because they will get used to the current learning process, which is carried out in a rotational model.

ISSN XXX-XXX-XXXX-XX-X

Figure 10. One of the Offline Classroom Activities in the 4th Semester PTIK Study Program Students FY. 2021/2022

c. Learning with the Rotation Model

1) Student Perception of Rotation Model Learning

After the pandemic began to decline and entered the second level, such as in Agam Regency, where the IAIN Bukittinggi campus is located, many schools and campuses in the city of Bukittinggi and Agam Regency began implementing a rotation model, which is carried out by means of some students conducting face-to-face learning on campus or school and some students carrying out online learning at home simultaneously. Students who answered they liked it got a percentage of 36.4%, then students who answered moderately got a percentage of 25.5%, followed by students who answered they really liked it got a percentage of 21.8%, students who answered they didn't like it got 12.7%, and students who answered they really didn't like it got a percentage of 3.6%.

From these results, it can be concluded that many students like the rotation model of learning, and some other students also quite like learning with offline learning models. Based on the data from students' answers, it can be concluded that the reason they like the rotation model learning model is because students can get the material directly, so they understand the material better than only with online learning. In addition, students can also interact directly with friends, which is not possible during online learning. This is in line with the opinion of Milya Sari (2019), who states that the advantages of the rotation model of learning are that it can enable more qualified learning so as to create effective, efficient learning and has its own charm, considering that many students tend to get bored with e-learning-based learning, especially educators who use asynchronous only.

ISSN XXX-XXX-XXXX-XX-X

4. Product phase

There are still many lecturers at IAIN Bukittinggi who have not maximized the use of ecampus in online learning, as well as the use of Meet Google applications that can be used as a means of learning live streaming for free, because it is enough to use a campus email account that has been owned by every lecturer at IAIN Bukittinggi. Most lecturers still use the paid Zoom meeting application; some even use it for free, but with a limited time of 30 minutes, and if it runs out, it is repeated again, so that time runs out when re-admitting lecture participants in this Zoom. Students complain a lot because when they hear the lecturer's explanation is cut off, they are less excited again.

D. CONCLUSION

The rotation learning model is currently one of the solutions for the learning process in schools because of the combination of online and face-to-face learning, the majority of the level of understanding possessed by students is better and better when receiving material. The results of the research indicate that the rotation model will minimize the obstacles of students when carrying out the learning process.

Based on the results of the research that has been obtained, the application of the rotation model learning model in higher education can generally be continued at the IAIN Bukittinggi campus, but for practical courses in the field of computer science is less effective because students are less able to code programs in accordance with learning outcomes, and also the need for a stable Wifi network from higher education institutions. However, for theoretical courses, this learning model is an alternative in providing variety in carrying out the lecture process in one running semester, with the combination of online and offline providing a new atmosphere and fostering student learning independence and students increasing students' sense of responsibility for themselves.

The need for funding allocations from the campus or government in providing free internet packages for students and lecturers who apply the rotation model of learning. And also the importance of training for lecturers in terms of using applications or software used in the application of the rotation model learning model.

E. REFERENCES

Belia Betari, Argitya Righo, T. H. P. (2020). Dampak Pembelajaran Online Pada Mahasiswa Dimasa Pandemi Covid-19 : Literature Review. *Jurnal EDUTECH Universitas Pendidikan Ganesha*.

Gibran, C. M., Setiyawati, S., & Liantoni, F. (2021). Prediksi Penambahan Kasus Covid-19

ISSN XXX-XXX-XXXX-XX-X

di Indonesia Melalui Pendekatan Time Series Menggunakan Metode Exponential Smoothing. *Jurnal Informatika Universitas Pamulang*, *6*(1), 112. https://doi.org/10.32493/informatika.v6i1.9442

Milya Sari. (2019). Blended Learning, Model Pembelajaran Abad ke-21 Di Perguruan Tinggi. *Ta'dib*, *24*(2), 233–237. https://doi.org/10.19109/tjie.v24i2.4833

Mufid, M. (2020). Evaluasi Model Context, Input, Process and Product (CIPP) Program Baca Tulis Al-Qur'an di Institut Agama Islam Negeri Pekalongan. *Quality*, *8*(1), 1. https://doi.org/10.21043/quality.v8i1.6908

Nurhayani, Yaswinda, & Movitaria, M. A. (2022). Model Evaluasi CIPP Dalam Mengevaluasi Program Pendidikan Karakter Sebagai Fungsi Pendidikan. *Jurnal Inovasi Penelitian*, *2*(8), 2353–2362.

Putri, P. G., Sosial, F. I., & Malang, U. N. (2022). *Online Learning : Dinamika Pembelajaran Selama Pandemi Dalam Persepsi Mahasiswa*. *32*(1), 28–40.

Putri, R. E. R., Zufriady, Z., & Mulyani, E. A. (2022). Analisis Dampak Proses Pembelajaran Daring Dimasa Pandemi Covid-19 Pada Mahasiswa Pgsd Fkip Universitas Riau. *Tunjuk Ajar: Jurnal Penelitian Ilmu Pendidikan*, *5*(1), 21. https://doi.org/10.31258/jta.v5i1.21-42

Rachmah, H. (2019). Blended Learning: Memudahkan Atau Menyulitkan? *Prosiding Seminar Nasional Fakultas Ilmu Sosial Universitas Negeri Medan*, *3*, 673–679. http://semnasfis.unimed.ac.id2549-435x

Sari, I. K. (2021). Blended Learning sebagai Alternatif Model Pembelajaran Inovatif di Masa Post-Pandemi di Sekolah Dasar. *Jurnal Basicedu*, *5*(4), 2156–2163. https://jbasic.org/index.php/basicedu/article/view/1137

Sukma Perdana Prasetya, N. B. S. & K. K. (2019). *Pengembangan Blanded Learning dengan Model Rotasi pada Mahasiswa Calon Guru Development of Blended Learning with Rotation Model for Prospective Teacher Students*. *11*(2), 273–282.

Verawati, & Desprayoga. (2019). Solusi Pembelajaran 4.0: Hybrid Learning. *Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, *2*, 999–1015.