# Development of Online-Based Cadre Infrastructure for Pimpinan Wilayah Nasyiatul Aisyiah of West Java

**Akhmad Bakhrun[a)], Iwan Awaludin, M. Rizqi Sholahuddin,
Sofy Fitriani, Maisevli Harika, Setiadi Rachmat**

Jurusan Teknik Komputer dan Informatika Politeknik Negeri Bandung
[a)]Corresponding Author: abakhrun@polban.co,id

**Abstract**

Nasyiatul Aisyiyah is part of the Persyarikatan Muhammadiyah which is engaged in da'wah among the younger generation aged 18-40 years. This generation is a productive generation who are usually pursuing a career or family. The leadership of the Nasyiatul Aisyiyah Region (Pimpinan Wilayah Nasyiatul Aisyiah, PWNA) during this pandemic has a regeneration problem. The main reason is that there are no online regeneration facilities. In addition, PWNA has not received knowledge about online learning systems, such as how to know the level of interest of a cadre when participating in online training, attracting cadres to continue to be interested in participating in training, and so on. This causes the regeneration process of cadres in an organization to be hampered. On the other hand, the lack of motivation to complete the course after registering causes the course completion rate to be low. A possible solution to overcome this problem is to do online regeneration with MOOC. The MOOCs system is a distance learning model. The MOOC system for this regeneration will use gamification. Gamification is the application of learning to follow elements such as in a game or game. By imitating like a game, it is hoped that it can motivate cadres in the learning process. So that the regeneration system can increase the interest of cadres to the learning. The output target of this Community Service (PkM) is the availability of Moodle-based MOOCs with gamification features in West Java PWNA. In addition, partners are expected to be able to operate the system independently, such as preparing content on the system. In addition, the system is also able to regulate access to materials according to the level of cadre members. Access rights to a material will be controlled automatically and the instructor can form statistics on participant reports systematically.

**Keywords**: Nasyiatul Aisyiah, PWNA, cadre, PkM, MOOC

## INTRODUCTION

Since early March 2020, Coronavirus Disease-19 (Covid-19) has been affecting many community activities in the worlds especially in Indonesia. To combat the spread of Covid-19, the Indonesian government has implemented a variety of initiatives, including social distancing, physical distancing, large-scale social restrictions (PSBB), and enforcement of community activity restrictions (PPKM). The infection can induce activity limits, which can bring the organization's operations to a standstill. Covid-19 is still active (Anwar et al., 2021), and no one knows when it will stop. But one thing is certain: the organization's activities must continue to run in order for the organization's agenda to be carried out properly. As a result, organization must implement plans in order for their operations to continue. As a result, organizations must develop strategies to ensure that organizational activities, particularly regeneration efforts, can continue to be carried out even if a pandemic strikes in the middle. Cadreization is a crucial activity for an organization's regeneration, as it ensures that the managerial relay for the organization's survival, such as Nasyiatul Aisyiah, is maintained.

Nasyiatul Aisyiah is an organization for young women which is one of the autonomous organizations of Muhammadiyah (*Nasyiatul Aisyiyah - Wikipedia Bahasa Indonesia, Ensiklopedia Bebas*, n.d.). This organization was founded in 28 Dzulhijjah 1345 H which coincided with May 16, 1931 Miladiyah in Yogyakarta (*Nasyiatul Aisyiyah - Wikipedia Bahasa Indonesia, Ensiklopedia Bebas*, n.d.). The establishment of Nasyiatul Aisyiyah also cannot be separated from its connection with the historical range of Muhammadiyah which is very concerned about the sustainability of the cadres of successors to the struggle (*Nasyiatul Aisyiyah*, n.d.). Nasyiatul

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Aisyiah was facing challenges in carrying out regeneration in the midst of the pandemic situation at that time. The implementation of offline regeneration is not possible because of the PSBB or PPKM. On the other hand, the potential for transmission of Covid-19 is very worrying which can threaten anyone, including regeneration participants who come from various regions if regeneration is carried out face-to-face. A possible solution in such a health crisis situation is to conduct regeneration online.

The implementation of online regeneration has its own advantages for participants. Online cadre is not limited by space and time. Participants can follow the regeneration from the regions and even from their respective homes. The regeneration materials can also be accessed by participants anytime and from anywhere. Online cadre can also save on transportation, lodging, and other accommodation costs. In addition, online regeneration minimizes the mobilization of participants, which is actually attended by participants from various regions. This is in line with the government's policy which requires its citizens to implement PSBB in the midst of a pandemic situation. Online cadre is an effort in an effort to prevent the transmission of Covid-19, especially among the best participants of the Nasyiatul Aisyiah organization.

However, online regeneration also has its own challenges. The literacy of participants in operating Information and Communication Technology (ICT) is not evenly distributed. Technical obstacles also sometimes arise and interfere with the smooth process of regeneration. Some of these technical obstacles included the speaker's voice not being heard clearly, the participant's microphone had problems so that participants could not ask verbally, and internet network disturbances that caused the participant's device to not be connected to the ongoing regeneration channel. Challenges like this, apart from disrupting the implementation of regeneration, can also reduce the enthusiasm of participants in participating in regeneration. This can cause the goals and quality of regeneration not to be achieved as it should be. On the other hand, organizations must develop and manage ICT resources that will be used as media in the regeneration process. In addition to costing a lot of money, they also have to have experts who will maintain their ICT resources, especially managing the media that will be used to send regeneration materials to participants. While the Nasyiatul Aisyiah organization is an organization for young women who do not have experts to manage ICT resources.

To minimize the obstacles faced by the Nasyiatul Aisyiah organization in carrying out regeneration in the midst of a pandemic situation, a team of lecturers from the Department of Computer and Informatics Engineering (JTK) at the Bandung State Polytechnic (Polban) offered a technical solution. In this Community Service (PkM) activity, an online regeneration infrastructure will be built using Moodle (*Moodle - Open-Source Learning Platform | Moodle.Org*, n.d.). Moodle is an open source platform that provides tools for instructors to develop and manage online courses (Shannon & Rice, 2017) by incorporating gamification elements to increase the learning motivation of regeneration participants (Armas et al., 2019). The stages of activities and their results will be explained in the following chapters.

## METHOD

This PkM implementation method consists of seven stages, namely: (1) problem identification; (2) literature study; (3) data collection; (4) needs analysis; (5) system planning; (6) system development; and (7) system implementation. Each stage is described in detail as follows:

1.  Problem Identification
    This section is the stage of identifying the problems faced by Nasyiatul Aisyiah in carrying out regeneration in the midst of a pandemic situation. This is because it is not possible to carry out regeneration offline. Moreover, there is a government policy to implement PSBB or PPKM in an effort to prevent the transmission of Covid-19. On the other hand, Nasyiatul Aisyiah does not have experience in organizing online cadre. Nasyiatul Aisyiah also does not have experts who focus on building and managing ICT infrastructure for the online regeneration process. Participants' literacy on the use of ICT is also not evenly distributed

so that it requires special training so that participants can access materials and follow the regeneration process which is carried out online.

2. Literature Study

This section is the stage for studying various literatures, both related to Nasyiatul Aisyiah's profile and related to online learning technology such as the Massive Open Online Courses (MOOCs) system (Metwally & Wang, 2017), Gamification, (Codish & Ravid, 2014), and Moodle.

3. Data Collection

This section is the stage of collecting data needed for the online regeneration system which includes the average number of regeneration participants, regeneration rules, regeneration implementation mechanisms, Nasyiatul Aisyiah profile, syllabus and regeneration materials.

4. Requirement Analysis

This section is the stage of analyzing the system requirements that will be used as an online regeneration facility. The analysis carried out at this stage, namely:

a) Profile of each level of regeneration.
b) Rules for increasing the level of regeneration.
c) Motivation of each cadre in joining the organization.
d) Unit structure that can support regeneration.
e) Annual work plan for regeneration that can support the system according to partner standards.
f) The structure of regeneration materials for each level of regeneration.

5. System Planning

This section is the planning stage of this system which includes:

a) Data reconciliation from Partners.
b) Creating a system that can support online regeneration.
c) Integrating the MOOCS System and Islamic gamification according to the principles of regeneration.

6. System Development

This section is the stage of system development and regeneration materials. Development of online learning media to manage regeneration material so that it can be accessed by regeneration participants anytime and from anywhere. The development of regeneration materials includes:

a) Systematic material management according to the regeneration curriculum owned by Nasyiatul Aisyiah. Each material is equipped with exam questions that must be answered by the participants to measure the level of mastery of the participants on the regeneration material. Materials are also arranged according to the level of cadre participants, such as Instructor Training Nasyiatul Aisyiah 1 (LINA 1), LINA 2, and LINA 3 as well as Darul Arqam Nasyiatul Aisyiah 1 (DANA 1), DANA 2, and DANA 3.
b) Producing learning materials in the form of audio-visual or multimedia that can be uploaded into online learning media so that regeneration participants can watch or download them.
c) Build infrastructure to install and manage ICT resources as learning media that will be used in the online regeneration process.

7. System Implementation

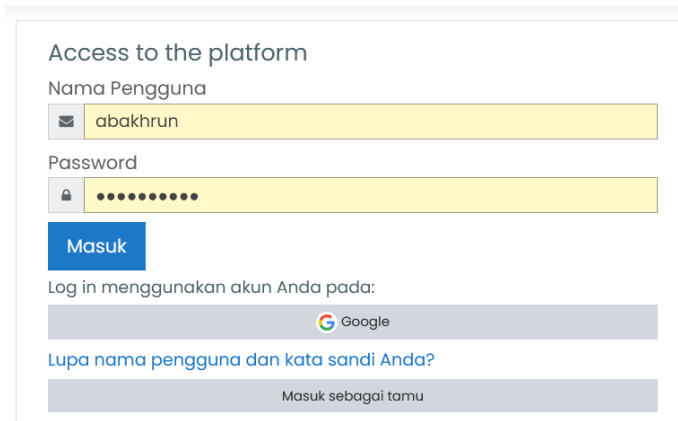This section is the system implementation phase which includes:

a) Install Moodle on the server computer and perform the required configuration.
b) Registering a domain name as a system address to make it easy for participants to remember so that regeneration participants can access the system easily.
c) Entering regeneration materials into the system including test questions to measure the level of understanding of participants from each material.

d) Conduct socialization to PWNA to provide evaluation in order to improve the online cadre system. The evaluation is carried out online using the Zoom application.

e) Provide training to regeneration participants on how to manage and or access online learning media to improve ICT literacy among regeneration participants.

f) Provide consulting services for Nasyiatul Aisyiah management regarding the operation of online learning media so that the utilization of the system is sustainable.

g) The support provided by the Polban lecturer team is provided free of charge as a form of dedication and service to the community, especially the Nasyiatul Aisyiah community which is an organization under the Muhammadiyah organization as one of the largest organizations in the country.

**RESULTS**

This PkM activity produces an online-based cadre infrastructure. Infrastructure in the form of domains and hosting as well as systems used to manage regeneration materials. To operate the system, cadre participants are given training first and then practice making material topics, administering quizzes, filling out articles on blogs, and so on. In addition, there is also a video tutorial on how to operate the system which can improve participants' understanding in operating the online regeneration system.

Participants can access the material by entering the address https://e-kader.pwnajabar.or.id/ into the Mozilla FireFox or Google Chrome browser. Next, participants enter their username and password to enter the system. The login form can be seen in Figure 1. If the participant does not have an account to login to the system, the participant must register an account first. Participants must have an email before registering an account. Email is required if at any time the participant forgets the password, the password will be reset to the email address registered to the system. Registration of participant accounts can be done by the system administrator.



**Figure 1**. Display of user login form

After the participant has successfully logged in, the participant must choose the material according to the level of regeneration. In the system there are general and special materials. General material for all participants such as material on Getting to Know Nasyiatul Aisyiah, material on Kemuhammadiyahan, and general information for participants. The special materials are special material for participants according to the level of training such as LINA I, LINA II, LINA II, DANA 1, DANA II, and DANA III materials. These specific materials must be studied by participants sequentially or sequentially. Participants cannot access the material at a higher level before completing the material at a lower level. Materials that have a lower level are a prerequisite to be able to take materials at the next level of regeneration. The list of materials can be seen in Figure 2. An example of the display of the material structure can be seen in Figure 3.
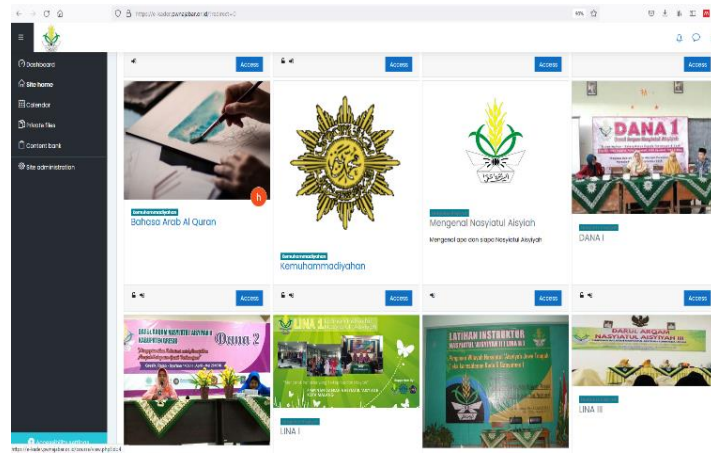
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*Sofy Fitriani, Maisevli Harika, Setiadi Rachmat*

**Figure 2.** Display of course list



**Figure 3.** Display of course material structure

After participants take the appropriate material, then participants must study the topics related to the material as can be seen in Figure 4. As with the material, topics must also be studied sequentially. Participants must complete the lower topics before studying the higher topics. Each topic has a test question to measure the level of participants' understanding of the topic. Participants must score above the minimum score to pass the cap. At the end of the material there is another test question. However, this exam question is an accumulation of exam questions for each topic that determines the participant's pass to the material. Participants are said to pass if they get a score above the minimum value. The display of the exam questions can be seen in Figure 5.
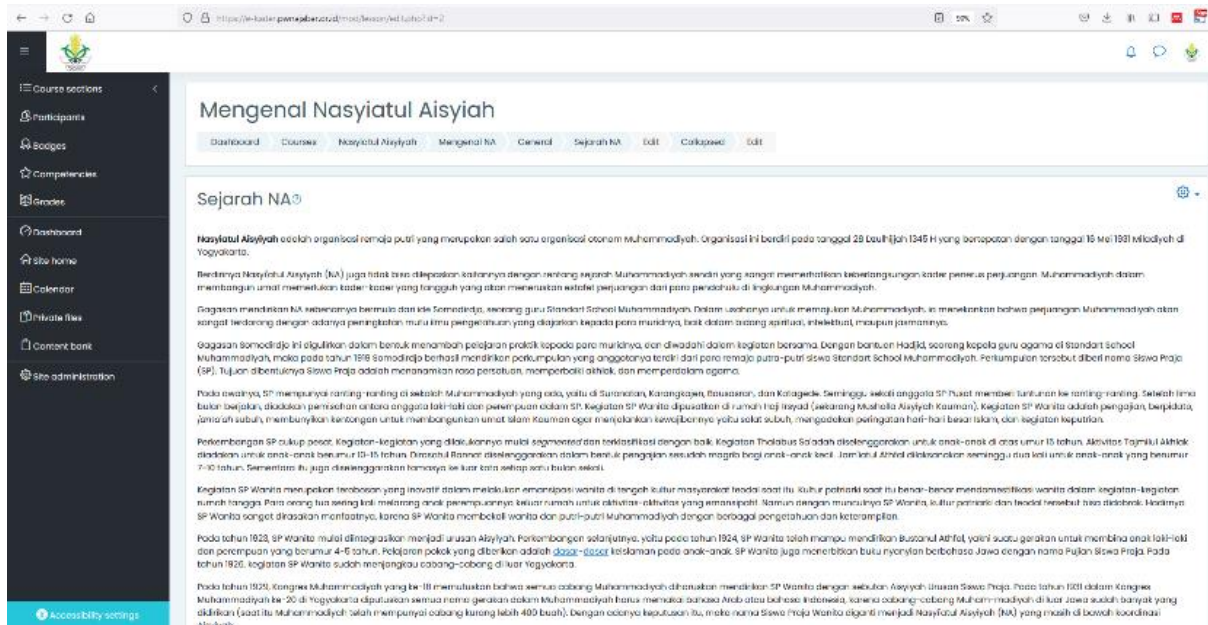
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*Sofy Fitriani, Maisevli Harika, Setiadi Rachmat*

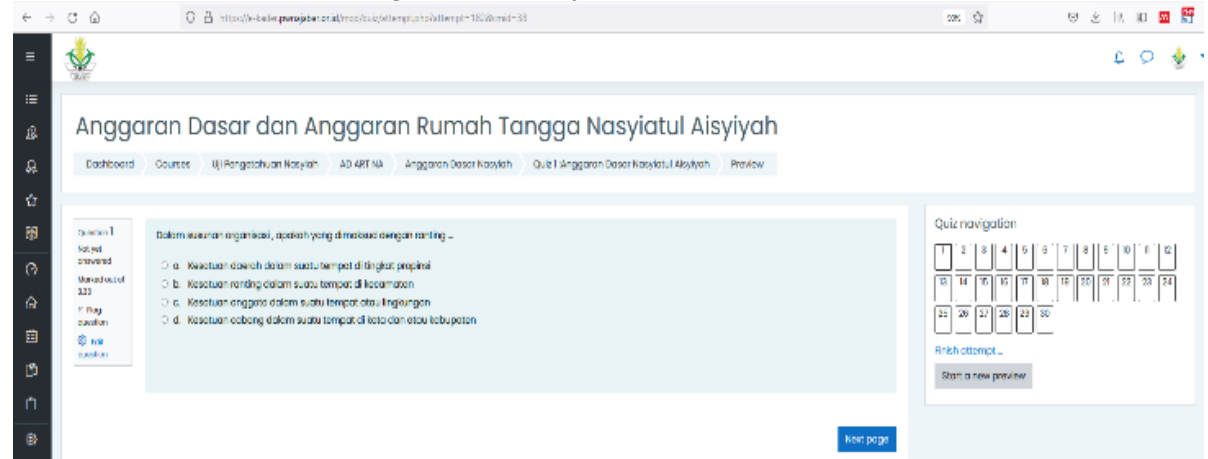**Figure 4.** Display of material content



**Figure 4.** Display of material content

This online regeneration system is also equipped with a video tutorial that explains how to access the content of the online regeneration system. Providing regeneration materials using videos can increase participants' knowledge such as research conducted by (Prasetyo et al., 2021). Cadre participants can watch this video to find out how to access materials online. This video tutorial also plays a role in uniforming the basic literacy of regeneration participants in terms of using the online regeneration system. Figure 6 is an example of a part 6 tutorial video display.

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**Figure 6.** Video tutorial display

After accessing the online regeneration materials, participants were asked to answer the quiz together. This quiz aims to determine the level of participants' understanding of the material that has been studied. The means used to carry out quizzes is quizizz (Basuki & Hidayati, 2019). Quizizz was chosen because it incorporates multimedia and gamification elements such as the sound of audio music that relaxes the participants, colors that brighten the eyes, animated slides, temporary ranking of participants, and so on. These elements can motivate participants to complete each regeneration material. This is important in carrying out online regeneration so that participants do not get bored. The feeling of boredom will result in participants leaving the online regeneration system before completing the material and in the end the regeneration material is not absorbed by the participants as they should.

## DISCUSSION

There are many software options as a MOOC server. Two popular software of which is Moodle and Google Classroom. Moodle has long been known as MOOC software and is used in thousands of schools and colleges and can be used for various online courses such as learning to translate English as in research (Songbin & Fanqi, 2015). Meanwhile, Google Classroom is widely used by schools after the pandemic period as a medium for introducing materials, assignments, and evaluations as reported in research (Sukmawati, 2020) (Ariyanto et al., 2020) (Kurniawan & Purnomo, 2020).

In comparison, Moodle requires a separate server if you want to use a private domain name. Because physically there is no server available and the price is expensive, another alternative is to rent a server or hosting. Server rental prices are tailored to your needs. At this time every training or cadre activity for West Java PWNA and the leadership under them is carried out with a maximum number of 60 participants. The Moodle documentation states that each user needs at least 20 MB of memory. This means that 1.2 GB of memory is needed to be able to serve 60 people simultaneously.

Server rental prices such as VPS in Indonesia are quite large. Usually a monthly price is applied with a limit of not being able to send emails to users. Whereas usually the ability to send email is required for the notification, registration, and password reset functions. Therefore it is not possible to use a VPS from within the country.

Apart from VPS, another alternative is to use shared hosting. However, with the increasing use of Moodle for schools, there has been a decline in the quality of hosting services due to

hosting server resources being confiscated by tenants who use Moodle. Therefore, since 2020 it can be ascertained that hosting service providers in Indonesia have prohibited the installation of Moodle on their hosting. There are several hosting providers that still allow the installation of Moodle with the consequence of terminating the service if the server is disrupted due to the use of Moodle.

Using Google Classroom requires a simpler server because it has been provided by Google for free. But Google Classroom does not allow for coordinating regeneration activities in a uniform format. Each classroom is independent from other classrooms. Meanwhile, in Moodle, the class delivery format can be made uniform. In addition, Moodle has backup and restore capabilities. This ability is needed to duplicate the regeneration class in the same level. For example, every PCNA will do DANA I. It is enough to create a standard class for DANA I, later this class can be duplicated in the same format for every PCNA in the West Java PWNA environment.

## CONCLUSIONS AND RECOMMENDATIONS

The development of online-based cadre infrastructure has been successfully carried out. The regeneration materials have also been entered into the system. The system can be accessed by all participants 24 hours per day anytime and from anywhere as long as the user's device is connected to the Internet. Thus, the Nasyiatul Aisyiah organization already has an online regeneration infrastructure that is ready to be used to carry out the online regeneration process. This online cadre system can not only be used in a pandemic situation, but under normal conditions it can also be used as a complement to the face-to-face regeneration process.

However, this system needs to be continuously managed and developed so that it can be used for a long time. Therefore, to improve the system for further development, the following suggestions are given:

1) The content of regeneration materials must be updated at any time according to the needs and developments of the times.
2) The bank of exam questions for each material needs to be expanded so that the potential for question leaks can be minimized.
3) The system should not only provide materials for organizational cadres but should also provide other materials that can be accessed by the general public. This is needed, in addition to socializing the existence of the Nasyiatul Aisyiah organization as well as one of the media for da'wah to the wider community.
4) Nasyiatul Aisyiah needs to have a special unit or division for the ICT section that focuses on managing its ICT infrastructure. Moreover, at this time, the role of ICT is quite significant in conveying da'wah messages that have a wider reach than da'wah delivered face-to-face in a limited room.
5) This system should not only be used as an alternative media but should be used as a main part of the entire regeneration process held within the Nasyiatul Aisyiah organization.
6) Nasyiatul Aisyiah continues to build relationships with the JTK Polban team both for online-based cadre infrastructure maintenance and for getting technical support when needed.

## ACKNOWLEDGMENTS

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**APPENDIX**



**Figure 7**.  e-kader training 1



**Figure 8**.  e-kader training 2

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*Sofy Fitriani, Maisevli Harika, Setiadi Rachmat*

**Figure 8**.  e-kader training 3



**Figure 9**.  e-kader trainer and nasyiatul aisyiah management