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Nosarara Nosabatutu: A Culturally Rooted Learning Model in the Midst of a Pandemic

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Abstract
The purpose of this study is to develop a Nosarara Nosabatutu learning model based on local culture and technology (Google Docs) to improve the effectiveness of online learning, as well as to assess the effectiveness, validity, and practicality of the model. This research uses research and development (R & D) methods with AP3A (Analyze, Planning, Preparing, Piloting & Apply) model procedures. This second year of research is the stage of developing and testing the effectiveness of the Nosarara Nosabatutu learning model, and is a series of research for 3 years. This second year of research resulted in a model for organizing lecture materials through the google document application, as a component of the Nosarara Nosabatutu learning model. The results of the research product test, both in the one to one test and in the small group test, show that the product in the form of learning materials that have been organized according to the Nosarara Nosabatutu learning model, is in the good category and is effective for improving learning outcomes during the covid-19 pandemic. The material organization model provides independence for students to learn according to their own learning style and pace of learning. This research presents an innovation in the form of integrating the Nosarara Nosabatutu learning model with the Google Docs platform, which combines technology with local cultural values. The impact is that this model not only improves student learning outcomes but also strengthens collaboration and the spirit of mutual cooperation in online learning.

Keywords: AP3A; Covid-19 Education Strategies; Culturally Responsive Pedagogy; Nosarara Nosabatutu

INTRODUCTION

The COVID-19 pandemic has revolutionized the education pattern globally, and all stakeholders have had to adapt rapidly to new situations (Purcell & Lumbreras, 2021; Babbar & Gupta, 2022; Komiya, 2024). The most pressing questions in education during the pandemic are not only related to offline-to-online learning, but also whether inclusivity and equity in access to education can be ensured (Talib et al., 2021; Al-Hawamdeh & Alam, 2022; Hà et al., 2025). The majority of the students and teachers are

hindered by such factors as inadequate technology infrastructure, unequal access to the internet, and limited technological capacity among teachers (Faturoti, 2022; Mathrani et al., 2022; Acquah et al., 2024). This has led to a digital divide that must be addressed as a matter of urgency for the sake of seeking quality learning.

Besides this, the pandemic has also served as a catalyst to accelerate digital transformation in education, which otherwise would have been slow (Jain et al., 2022; Gorina et al., 2023; Pangandaman, 2023). Digitalization of learning is not just a question of moving content online but also includes an innovative strategy that can maintain student interaction, collaboration, and engagement (Egielewa et al., 2021; Bygstad et al., 2022; Alenezi et al.,2023). That is to say, achievement with online education greatly depends on learning model design that adheres to the students' nature and conditions of learning environments (Farley & Burbules, 2022; Ojetunde & Ramnarain, 2023; Contrino et al., 2024).

One relevant approach in this situation is to utilize technology that is already familiar to many people, such as the Google Docs application. This application not only allows real-time collaboration but also provides flexibility in managing learning materials (Saeed & Al Qunayeer, 2022; Vireak et al., 2025). In the context of the pandemic, this flexibility is especially important because it allows students and teachers to stay connected even though they are physically separated (Kohnke & Moorhouse, 2021; Oliveira et al., 2021; Vilchez et al., 2021).

In addition to Google Docs, learning models such as Nosarara Nosabatutu provide a relevant framework for integrating local values into the learning process. This model emphasizes the importance of local adaptation in online-based learning, so that students not only gain academic knowledge but also understand and appreciate local wisdom (Abas et al., 2022; Primayanti & Puspita, 2022; Asmayawati et al., 2024). This is in line with the holistic goal of education, namely to produce individuals who are not only intellectually intelligent but also have cultural insight and collaborative skills (Liu et al., 2023; Shet, 2024; Yu, 2024).

On the other hand, it is also important to pay attention to the challenges that arise from the implementation of online learning. In addition to the digital divide, the decrease in physical interaction between students and teachers has the potential to affect the quality of social and emotional relationships in the learning process (Kormos & Wisdom, 2023; Sandilos et al., 2023). Therefore, the learning approach must be able to accommodate these needs, by ensuring a balance between aspects of technology, pedagogy, and human interaction.

Previous research conducted by Al-Ghurbani et al., (2022) focused on individual and institutional aspects, such as motivation, self-confidence, and technological skills. The context of this research emphasizes the formal use of technology in higher education environments with a quantitative or mixed approach to measure its effectiveness. In contrast, the current research on Nosarara Nosabatutu as a local culture-based learning model emphasizes the integration of social and cultural values in the learning process during the pandemic. This research uses a qualitative or cultural design-based approach to explore how local values can strengthen social and emotional relationships in education. If previous research highlights the importance of improving individual competencies and technological infrastructure, the current research provides a contextual solution by showing that a local culture-based approach can present a more holistic and relevant learning model. This gap shows the difference in focus between a technology-based approach and a culture-based approach in dealing with learning challenges during the pandemic.

The novelty of this study lies in the development and implementation of the Nosarara Nosabatutu learning model integrated with the Google Docs platform. This model not only offers solutions to the technical challenges of online learning, but also becomes an innovative approach that integrates local cultural values in the learning process. Thus, this study provides a new contribution to the development of technology-based learning models that are more adaptive and contextual, and relevant to educational needs in the pandemic and post-pandemic eras.

The urgency of this research is even higher considering the importance of creating an educational ecosystem that is able to accommodate students' needs amidst rapid changes. On the one hand, the pandemic has forced educators and students to switch to online methods, but on the other hand, a learning approach that only focuses on technical aspects without considering social and cultural dimensions has

the potential to produce a less holistic learning experience. Therefore, this research is not only relevant in the context of the pandemic, but also serves as a guide to face future educational challenges, where technology and local wisdom can synergize to produce meaningful and sustainable learning. The purpose of this study is to develop a Nosarara Nosabatutu learning model based on local culture and integrated with Google Docs to improve the effectiveness of online learning. This study also aims to test the effectiveness of the model in improving student learning outcomes and providing a technology-based lecture material organization that supports independent learning. In addition, this study seeks to assess the validity and practicality of the model through limited trials and integrate local cultural values into technology-based learning to improve student collaboration and engagement.

RESEARCH METHODS

This study uses the Research and Development (R&D) method with the AP3A (Analyze, Planning, Preparing, Piloting & Apply) model procedure (Aschbrenner et al., 2022; Vercaruz et al., 2023; Adlaon et al., 2024). In the second year of this three-year research series, the focus of the research is on the development and testing of the effectiveness of the Nosarara Nosabatutu learning model. This research produces a model for organizing lecture materials through the Google Docs application as one of the main components in the Nosarara Nosabatutu learning model. This research was conducted in the second year of the three-year research plan, namely from January to December. The research was conducted online due to the COVID-19 pandemic. The research location is centered on higher education institutions, with data collected through digital platforms such as Google Forms and Google Docs to reach lecturers and students at various universities.

The subjects of the study were lecturers and students at universities that use online learning materials based on the Nosarara Nosabatutu model. The sampling technique was carried out using purposive sampling, with the criteria being lecturers who have experience in online-based development and teaching and students who are actively involved in online learning and have used the Google Docs application in the learning process (Andrade, 2021). This study uses the Research and Development (R&D) method with the AP3A model consisting of five main stages, namely Analyze, Planning, Preparing, Piloting, and Apply. In the Analyze stage, the need for organizing online-based learning materials and the relevance of implementing local cultural values in the Nosarara Nosabatutu learning model are identified. The Planning stage focuses on designing a learning material organization model that is integrated with the Google Docs application. Furthermore, the Preparing stage includes the development of learning materials in various formats, such as text, video, and interactive media, which can be accessed online through the Google Docs platform. In the Piloting stage, the models and materials developed are tested on research subjects to measure their effectiveness and practicality. The final stage, Apply, involves the application of the learning model more widely based on the evaluation of the results of previous trials. The research procedure can be seen in the following image.

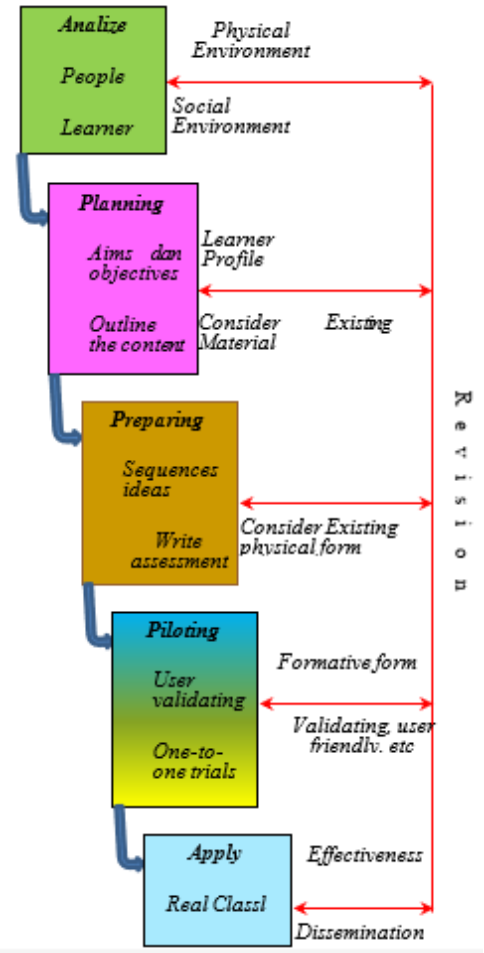

Figure 1. Research Procedure

The instruments used in this study include a questionnaire via Google Forms to collect initial data on learning needs (Al-Momani et al., 2024; Krieglstein et al., 2023), learning materials organized via Google Docs as a research product, and learning outcome evaluation tools to measure the validity and effectiveness of teaching materials. The data collection technique was carried out through purposive sampling (Aizinsh et al., 2023; Rismawan et al., 2023), with research subjects consisting of lecturers experienced in online teaching and students who are active in online learning. Data were collected by filling out a descriptive questionnaire to identify initial needs (Azadboni & Septi, 2023), as well as a learning outcome test to evaluate the effectiveness of the teaching materials that had been organized.

Data analysis techniques include quantitative and qualitative analysis. Quantitative analysis is used to test the validity of the construct through one-to-one learner test and one-to-one expert test, and to measure the effectiveness of teaching materials through small group learner test with an average effectiveness result of 79.17% (Gurbani et al., 2023; Isaeva et al., 2025; Junita & Prasad, 2024). Meanwhile, qualitative analysis is conducted to evaluate the initial learning needs and the effectiveness of the implementation of the Nosarara Nosabatutu learning model (Hyskaj et al., 2024). The results of this analysis are the basis for further material development and validation of the learning model that has been developed.

RESULTS AND DISCUSSION

Research begins by identifying students' prior knowledge of the materials in the programmed courses. The identification procedure is carried out through a descriptive google document. The results of the identification of students' initial knowledge can be summarized in the following table:

Table 1. Students' Initial Knowledge

Questions	Summary of Answers	Conclusions
Purpose of studying the Course To	Scientific insight, preparation to become a teacher, become a good citizen, nationalism	Increase Lack and need to be improved
Materials which supports the achievement of the subjects	Still unable to identify the materials and content that support the achievement of the competency of the courses	Less and needs to be improved
Self-evaluation of mastery in the subjects	Student mastery is more about theoretical knowledge, concepts and knowledge, not yet up to skills and attitudes	Lack of and need to be improved
Lecture materials and content that have not been mastered	Approaches and learning models that can be implemented in schools	Less and need to be improved
Causes of difficulty understanding the material	There is no real example, do not have the ability to adapt Words and learning models with student characteristics, too many learning models to be confused to determine	Requires guidance

Identification data of students' initial abilities are in Table 1. It shows that all components of the questions asked to students are still in poor status. Based on this data, in general, students' understanding of the subject is still lacking so it needs to be improved. Initial identification is carried out as part of the needs analysis process, which is the initial stage of the AP3A development procedure. Early identification is an important part of development research, which is often referred to as needs analysis. Needs analysis is carried out to find out the problems, needs and solutions to problems at the research site (Cadiz et al., 2024; Jumaera et al., 2024). Based on the data in Table 1. It is necessary to develop materials that are specifically organized according to learning needs during the covid-19 pandemic.

The identification results become the basis for determining courses and formulating Semester Learning Plans for predetermined courses. The determination of the course is based on the considerations of the researcher on the urgency of organizing the material in the subject in question. One of the considerations used is the percentage of students' answers which indicate the high student need for the material. Another consideration used in determining courses is that the courses are programmed by several classes in parallel. The following table shows the courses, classes and the number of students involved in organizing material for learning during the COVID-19 pandemic.

Table 2. Subjects developed with material

No.	Course	Number of Classes Class	Name	Number of Students
1	Civics Learning Elementary School	4	A, B, C, D	143
2	Learning Media	4	A, B, D	105

The organization of the material is carried out in two courses as shown in table 2 above. In addition to considering students' answers to the questionnaire, these two courses are relevant for using the Project-Based Learning approach. Elementary Civics Learning and Learning Media courses are product-oriented, therefore the procedure for organizing lecture materials is feasible to be implemented in these two courses. The competencies of these two courses become the basis for student skills after becoming teachers. Project-

Based Learning carries the central idea that students must produce products that are relevant to the real world and encourage students' minds to think about what to do after completing their undergraduate education.

Furthermore, the researchers developed learning tools with the first activity being to formulate learning objectives. Based on the draft of the formulation of the learning objectives, followed by compiling the outlines of the learning materials, selecting the media that will be used to deliver the learning materials and determining the appropriate learning methods. This procedure in the development model used is the entire activity that is in the planning stage.

The media used as a medium for organizing learning materials are google forms and google documents which are packaged in the learning website. In accordance with the learning model used, the google website used was named Nosarara Nosabatutu Online Learning (NNOL). This website is used to organize learning materials for all subjects that the researcher takes in the current semester. The front view of the google site for organizing learning materials can be seen in the following figure:

Figure 2. Homepage of the NNOL Website

Figure 2. is the homepage of the NNOL website, this website is used as a medium for organizing learning materials in the Civics Elementary School Learning course and the Learning Media course . The procedure for preparing a learning website is part of the preparation or preparation stage. In addition to preparing a website, a link that can be accessed by students is also prepared, both a link to access material and a link to send assignments as well as to evaluate the learning process and results. This is done because during the COVID-19 pandemic, learning is carried out with a full online approach. Material organization is done by distributing material links that can be accessed by students with one click. The preparation of the link is intended to make it easier for students so that they do not need to surf the internet to find the materials needed to support students' understanding of the materials provided by the lecturer. The circulation of the organization of materials on the NNOL learning website is shown below:

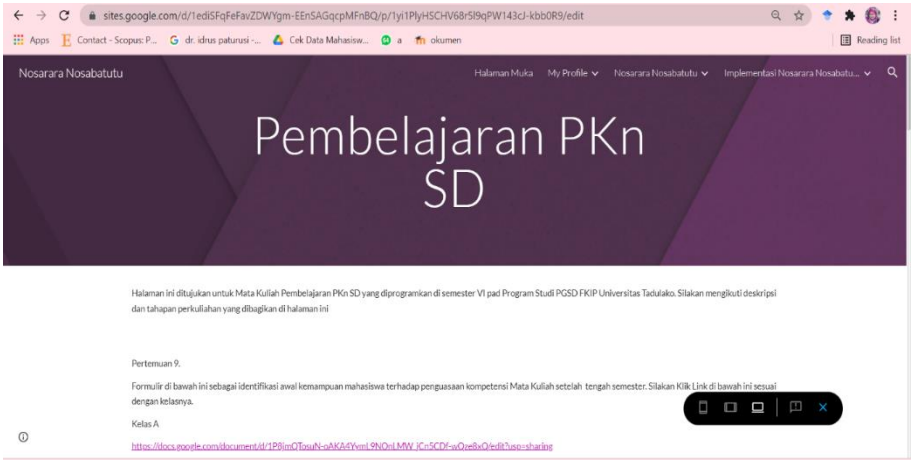

Figure 3. Display of the Learning Website for Elementary Civics Learning Courses

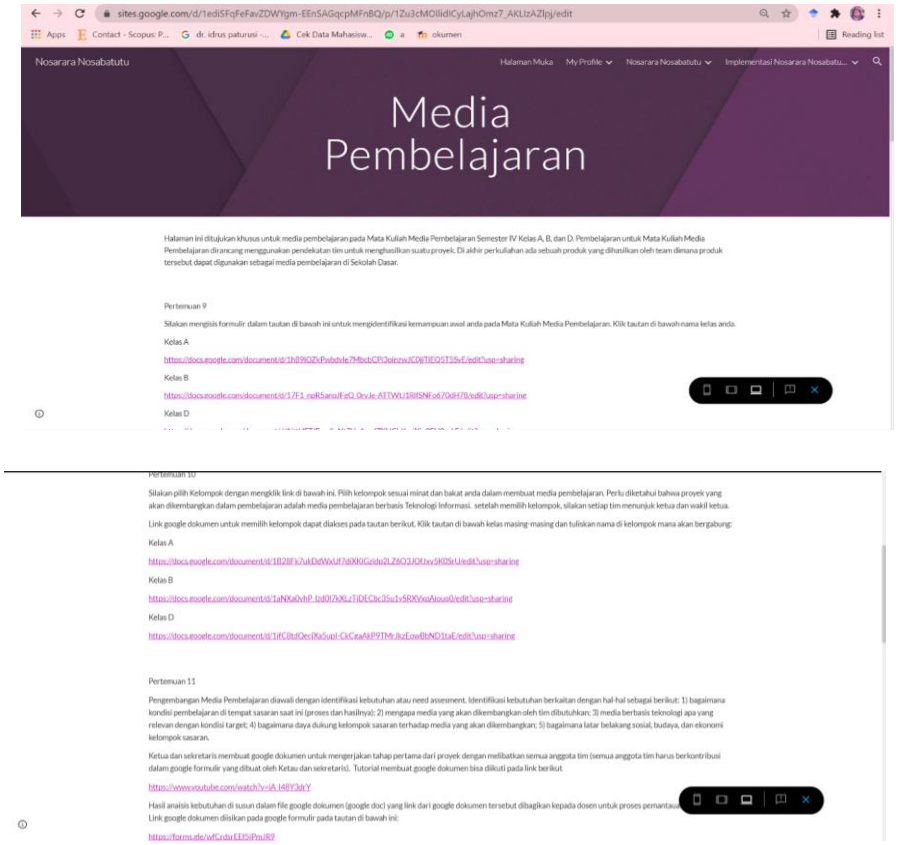

Figure 4. Display of Learning Websites for Learning Media Courses

Figures 3 and 4 are the initial page views for learning in Civics Elementary and Civics learning courses Learning Media. Organizing the material is a planning process as a medium to achieve learning goals and objectives. This website is shared with students via links in the group WhatsApp and can also be accessed from the Learning Management System used in the faculty. Integrating online learning applications is a common thing to do in learning during the covid-19 pandemic. There are many applications that can be used for learning so that opportunities for integration and collaboration in the use of learning applications are wide open.

The organization of the material as shown in Figures 2 and 3 is then implemented in learning using the nosarara nosabatutu learning model. The Nosarara Nosabatutu learning model consists of 5 steps organized into 3 stages of activity, namely introduction, core activities and closing activities, which can be seen in the following figure:

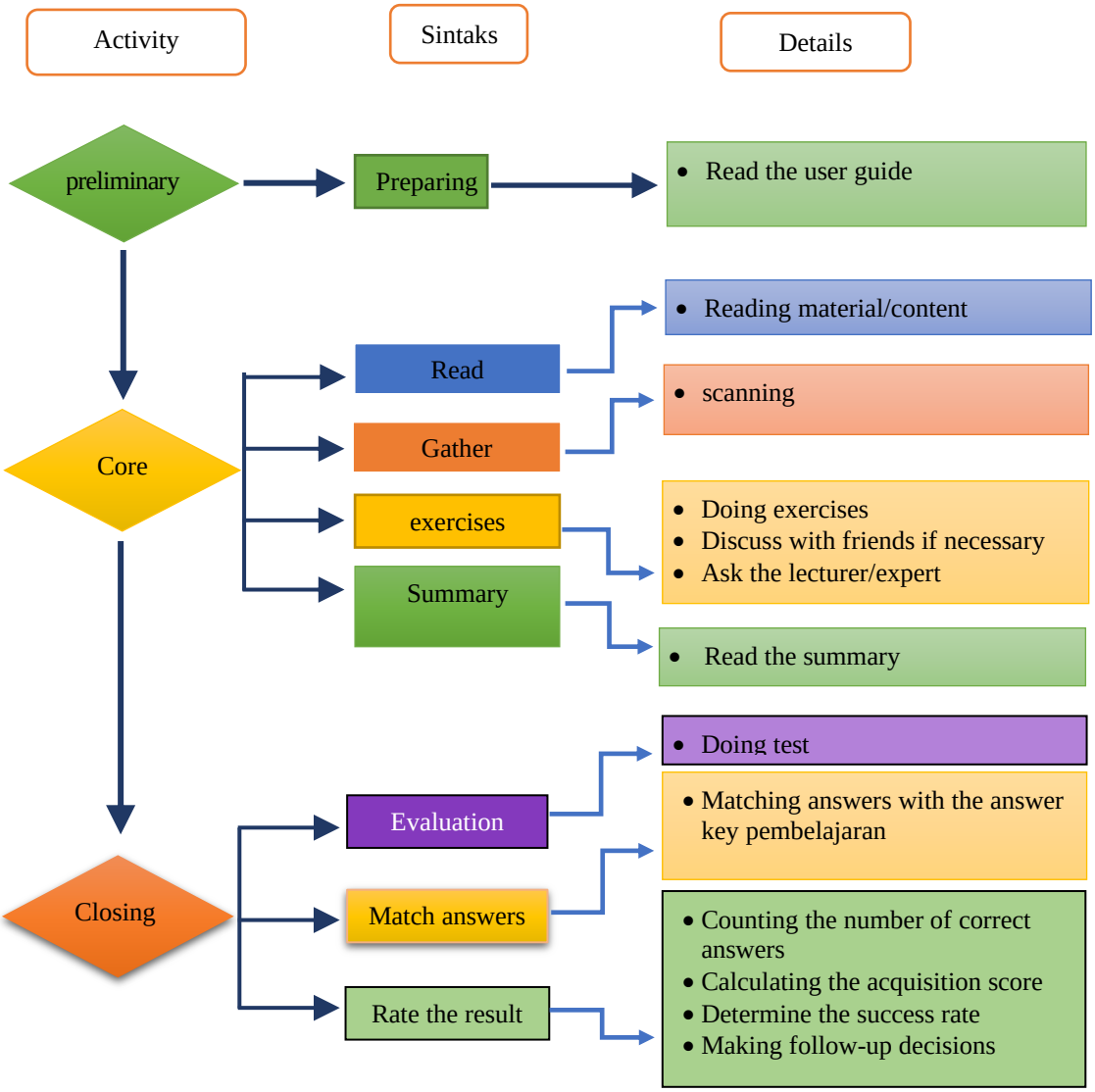

Figure 5. *Nosarara Nosabatutu* Learning Model

A learning model is a learning model that is projected to be implemented independently by students. *Nosarara nosabatutu* learning model is relevant to learning conditions during the covid-19 pandemic. The results of product testing organization-based learning materials *nosarara nosabatutu* learning model can be delivered at table below:

Table 3. Results of Tests organizing learning materials

Type Test	Number of test subject	test results	Conclusion
One-to-one learner	3	3.33	Valid
One- to-one expert	3	3.17	Valid
Small group learner	8	79.17	Effective

The validity test referred to in this study is the construct validity of the products produced in the study. Table 3. shows that the construct validity test was compiled from the one-to-one learner test and the one-to-one expert test. The small group learner test is a test on student learning outcomes after using materials organized through NNOL and using the *Nosarara Nosabatutu* learning model. The results of this

study indicate that the organization of materials and products resulting from this research process is feasible to be used in lectures, both in terms of construct validity and content validity.

In this study, researchers integrated three learning applications, namely the Google site, Edmodo-based learning management system, and WhatsApp. Google is used to organize learning materials, while WhatsApp is used for group interaction and information sharing (Rachmatika & Salighehdar, 2024; Rossini et al., 2021), as well as sending links to access websites. Learning Management System is a learning application that is officially used on campus, so classes are opened for every scheduled course (Ahmad et al., 2024; Mohammadi et al., 2021; Nguyen, 2021). Learning Management System is used to connect the NNOL website with students, because all students have been enrolled into the Learning Management System application (Mihai et al., 2023).

The results of the study show that the Nosarara Nosabatutu learning model, which is integrated with Google Docs technology, is effective in improving student learning outcomes during the pandemic. However, the relevance of this model lies not only in its technological aspects, but also in its ability to integrate local cultural values in online learning. The Nosarara Nosabatutu model is designed with a philosophy rooted in the values of togetherness, collaboration, and mutual cooperation, which are the essence of the local culture of the Central Sulawesi community. These values are reflected in the structure of the learning model, such as the use of collaborative activities through Google Docs and group discussions that encourage cooperation and mutual respect among students.

For example, in the core stage of learning, students are invited to read, discuss, and provide feedback to each other through an online platform (Burke & Larmar, 2021; Hizon et al., 2024). This activity reflects the spirit of Nosarara Nosabatutu which means togetherness in achieving common goals. In addition, the use of technology such as Google Docs provides flexibility for students to learn according to their own style and pace, thus supporting inclusive learning and respecting individual diversity.

However, to further strengthen the integration of local wisdom, this model can include specific materials or case studies related to the local cultural context. For example, in courses that use this model, topics that raise relevant local traditions, history, or issues can be added. In this way, students not only gain academic knowledge but are also able to appreciate and apply local cultural values in their lives.

Although this research was conducted in the context of the COVID-19 pandemic, the Nosarara Nosabatutu learning model has great potential to be applied outside of this emergency situation. One of the main advantages of this model is its flexibility in supporting online learning that is collaborative and adaptive to the needs of students. In a post-pandemic context, this model can be adopted as a blended learning approach, where online learning via Google Docs is combined with face-to-face meetings. This approach will allow educators to utilize technology to facilitate collaboration and independent learning, while direct interaction is still used for activities that require in-depth discussions or practical experiments (Lan, 2024; Trisahid et al., 2024; Worachak et al., 2023).

In addition, this model can be adapted to various other educational contexts, such as teacher training or learning in remote areas. With slight modifications, the Nosarara Nosabatutu model can be designed to include more elements of technology that can be accessed offline, thus reaching learners with limited internet access. The local culture-based approach is also relevant in a global context, as it provides inspiration on how local values can be integrated into digital learning, creating a more meaningful learning experience (Mokoginta & Mokwena, 2024; Singh, 2022; Socrates et al., 2023).

This research has a significant positive impact on the development of technology-based learning models that are integrated with local cultural values (Kurniawan et al., 2023). The Nosarara Nosabatutu model, implemented through the Google Docs platform, has proven to be effective not only in improving student learning outcomes but also in encouraging collaboration and independent learning. The use of this model shows that technology can be used as a means to strengthen local cultural values, such as mutual cooperation and togetherness, which are relevant in the context of education in Indonesia. In addition, this study contributes to the literature on technology integration in online learning, especially during the COVID-19 pandemic, by offering an innovative and contextual approach.

However, this study also has several limitations that need to be considered. First, the research sample is limited to students and lecturers at several higher education institutions, so the results cannot be

generalized to a wider population. Second, the success of this model is highly dependent on the availability of stable internet access and the technical capabilities of users, which may not be evenly distributed across regions, especially in remote areas. Third, testing the effectiveness of this model focuses more on cognitive learning outcomes, while its impact on the development of affective competencies and practical skills has yet to be explored in depth. Further research is needed to evaluate how this model can be adjusted to overcome these limitations and adapted to various educational contexts outside of the pandemic situation.

CONCLUSION

The development procedure with the AP3A model has resulted in the organization of materials used in learning during the covid-19 pandemic. The material that has been organized through the NNOL learning website is used with the *Nosarara Nosabatutu* learning model approach. The results of the research product test both in the one-to-one test and in the small group test indicate that the product in the form of learning materials that have been organized according to the *Nosarara Nosabatutu* learning model, is in the good category and is valid for use in learning. The results of the qualitative analysis also show that the material that has been organized is effective based on the test results on the learning outcomes test during the covid-19 pandemic. The results of this study also show that the development procedure with the AP3A development model is effective in producing products in the form of learning materials organized through the NNOL website. The material organization model provides independence for students to learn according to their own learning style and pace of learning. Further research is suggested to expand the sample coverage to various levels of education and wider areas to increase the generalizability of the results. In addition, testing the impact of the Nosarara Nosabatutu model on the development of affective competence and practical skills needs to be done to complement the existing findings.

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