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Research Article

DEVELOPMENT OF VIRTUAL LEARNING-BASED LESSON PLANS USING GOOGLE CLASSROOM FOR GRADE 5 THEME 1 AT SURONATAN MUHAMMADIYAH ELEMENTARY SCHOOL YOGYAKARTA

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Abstract
This study aims to determine the steps for developing and assessing the quality of virtual learning-based lesson plans using Google Classroom for Grade 5 students at Muhammadiyah Suronatan Elementary School Yogyakarta with Thematic Material Theme 1 Sub-theme 1. This study used the research and development (R&D) method, specifically the model developed by Borg and Gall. The research subjects were curriculum experts, subject matter experts, learning experts, and teacher assessors. The data collection technique was product assessment. From the results of the assessment of the quality of the learning plan by the curriculum expert, a score of 75 was obtained with a category of "good", the subject matter expert obtained a score of 75 with a category of "good", the learning expert obtained a score of 90 with a category of "very good", and the average score from the expert validation was 80 with a category of "very good". The assessment of classroom teacher responses yielded an average score of 92.5, categorized as "very good." The final assessment results from the validation experts and teachers yielded a score of 86.25, categorized as "very feasible," indicating that the virtual learning-based lesson plan using Google Classroom for fifth grade at Muhammadiyah Suronatan Elementary School Yogyakarta is very good to use as an alternative learning method for students and teachers.

Keywords: learning plan, virtual learning, google classroom

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INTRODUCTION

Technology in the 4.0 era is experiencing rapid development in all fields that help human life, thereby triggering public awareness of the importance of information technology. One field that can and is expected to make optimal use of technology is education. Every sector of education is expected to be able to fully utilize technology to support operational activities, both in learning and administration. According to Virdi in (Gunawan & Sunarman, 2017), currently, participants in the learning process are students from Generation Z, or a generation that has been familiar with technology from an early age. Teacher-centered learning is no longer suitable for this generation, so it needs to be changed to a more student-centered approach, especially for students with diverse abilities. According to (Nurfalah, 2019) The impact of technology on education is increasingly felt in line with the shift of face-to-face (conventional) learning patterns towards a more open education, namely by utilizing information and communication technology as a learning medium to meet the need for almost unlimited information. In this case, educational technology is expected to be able to maximize learning for Generation Z, who have been familiar with technology from an early age.

One such technology that can be used by the education sector is virtual learning, commonly known as e-learning. E-learning has a system that regulates all features and access for both users and visitors can easily use it. This system is the Learning Management System (LMS). According to Romi in (Darmawan, 2015). Learning Management System (LMS) is a Software application for operating teaching and learning activities and school activities conducted online (connected to the internet), such as administration, documentation, reporting on teaching and learning activities, and teaching materials provided online via the web and accessible via the internet. In essence, an LMS is an application that operates and processes data and virtualizes the teaching and learning process electronically. LMS has been developed dynamically so that the entire teaching and learning process can be connected online or offline and contains a variety of materials in multimedia form, as well as guidelines and material qualifications for learning development.

Technological literacy today can be easily seen with the emergence of a new learning model that collaborates with technological developments or other media, namely Blended Learning. Blended learning is one solution that can be implemented by teachers in learning (Wicaksono & Rachmadyanti, 2016), while according to (Sari, 2013), blended learning is a type of learning that can combine face-to-face learning with online learning. Blended learning demonstrates learning that has flexibility in terms of time, place, and a greater variety of learning methods compared to other methods. The learning model that can maximize the use of technological advancements is blended learning, and the media that is easy to use and access is e-learning.

E-learning is now widely available in the field of education, with examples including Google Classroom. Google Classroom is an internet-based service provided by Google as an e-learning or virtual learning system that can be accessed anywhere and anytime. According to (Hakim, 2016) Using Google Classroom does not require a complicated installation process. Once an administrator has set up a Google Account equipped with Google Apps for Education for a school, educators and students can use Google Classroom with their respective Google email accounts. Google Classroom is very easy to use for teachers and students. To create a class, teachers simply create a new class in Google Classroom. After creating a new class, teachers can invite students to join the class using the class code obtained when creating the class or by using email directly. Because Google Classroom is integrated with email, invitations to join can be easily distributed both online and offline. Google Classroom also has many features that can be used because the service is fully supported by Google directly. These features include Google Drive, which can store files online so that students can view them anytime and anywhere as long as they are connected to the internet. Students can work on group assignments directly, as Google Docs can be accessed by multiple people simultaneously

in a single file, allowing group work to be done without needing to meet or see each other face-to-face. Teachers can also set deadlines for assignment submissions and schedules for the material to be covered. The system within Google Classroom records the time assignments are submitted, allowing teachers to see whether students have submitted their assignments on time or not. Google Classroom is not limited to the features provided by Google Apps for Education; teachers can also add media, files, URLs, or videos obtained from sources other than those provided by Google. This feature makes classes more interactive and productive. In creating classes using Google Classroom, one must also have the competence to develop more mature lesson plans, as these plans must maximize the use of the functions and features available in Google Classroom. A good and proper lesson plan is one that maximizes all the functions and facilities provided by the learning media so that students can learn more effectively and efficiently.

Based on interviews conducted by the researcher at Muhammadiyah Suronatan Elementary School, Yogyakarta, it was found that the school actually has adequate internet access to support learning. However, the utilization of technological developments has not been optimized, as learning still focuses on face-to-face instruction, while distance learning (virtual learning) has not been systematically prepared. During the Covid-19 pandemic, learning was carried out only through the distribution of assignments via WhatsApp, which caused students to feel burdened by the large number of tasks and prevented them from gaining meaningful learning experiences. This condition occurred because the school had not prepared alternative learning methods, one of which is distance learning based on online learning platforms.

These findings are consistent with various studies conducted in other regions, which indicate that the use of Learning Management System (LMS)-based learning media, such as Google Classroom, can enhance the effectiveness of distance learning. Research by Gunawan and Sunarman (2017) in West Java showed that Google Classroom can increase students' engagement and learning autonomy, as learning materials, assignments, and feedback can be accessed in a structured manner. Another study by Iftakhar (2016) in Bangladesh reported that Google Classroom facilitates online classroom management and improves communication between teachers and students. Furthermore, research by Al-Maroof and Al-Emran (2018) in the Middle East found that the use of Google Classroom positively affects students' perceived ease of use and acceptance of technology. In Indonesia, studies by Soni et al. (2018) and Sabran and Sabara (2019) also reported that Google Classroom is effective as an online learning medium because it is flexible, easily accessible, and capable of supporting collaborative learning.

Based on these problems and findings from previous studies, the researcher seeks to develop a virtual learning-based instructional plan using Google Classroom for fifth-grade students at Muhammadiyah Suronatan Elementary School, Yogyakarta. This development aims to ensure that learning can continue virtually in a structured and interactive manner without overburdening students with tasks beyond their capabilities. Therefore, a virtual classroom is needed that can accommodate and cover all essential aspects of learning, similar to those found in conventional face-to-face instruction.

RESEARCH METHOD

Research Design

This study employs a Research and Development (R&D) design using the Borg and Gall development model. The model consists of ten systematic stages: research and information gathering, planning, preliminary product development, preliminary field testing, product revision, main field testing, operational product revision, operational field testing, final product refinement, and dissemination. However, in this study, the development process was carried out only up to the ninth stage, namely final product refinement. This model was

selected because it provides a comprehensive and iterative approach to developing educational products through continuous evaluation and improvement.

The research was conducted at Muhammadiyah Suronatan Elementary School Yogyakarta. This location was selected based on its relevance to the needs of the study and its suitability as the site for implementing preliminary and main product trials involving fifth-grade teachers.

Research Target/Subject

The research subjects consisted of three expert validators—a curriculum expert, a subject matter expert, and a learning expert—who were involved in assessing and validating the developed product. Additionally, two fifth-grade teachers, representing class A and class B, participated as respondents during both the preliminary and main field testing stages. The selection of experts and teachers was carried out using a purposive technique, ensuring that each subject possessed relevant expertise and experience necessary for evaluating the product effectively.

Research Procedure

The research procedure followed the stages of the Borg and Gall development model. The process began with research and information gathering, which involved collecting data related to the curriculum, learning needs, and contextual requirements. This was followed by the planning stage, during which the conceptual framework and development goals were formulated. The preliminary product was then developed and subsequently tested through preliminary field testing conducted by fifth-grade teachers. Based on feedback from this stage, the product was revised and further tested in the main field testing. Afterward, an operational product revision was carried out, followed by operational field testing to ensure feasibility and effectiveness. The study concluded at the ninth stage, final product refinement, informed by expert validation and teacher evaluations.

Instruments, and Data Collection Techniques

Data were collected using several instruments, including teacher assessment sheets and expert validation sheets. The validation sheets were used by the curriculum expert, subject matter expert, and learning expert to evaluate various aspects of the product, while the teacher assessment sheets were used to gather practical feedback from fifth-grade teachers during field testing. These instruments enabled the collection of both quantitative scores and qualitative comments related to product quality, feasibility, and usability.

Data Analysis Technique

The data obtained from expert validators and teacher assessments were analyzed using both quantitative and qualitative techniques. Quantitative analysis involved converting assessment scores into numerical values to determine the overall quality and level of feasibility of the developed product. Meanwhile, qualitative analysis was used to interpret written comments, suggestions, and feedback provided by experts and teachers. The combined results of both analytical approaches served as the basis for refining the product and evaluating its suitability for use in the learning process.

RESULTS AND DISCUSSION

Based on the research results, learning at Muhammadiyah Suronatan Elementary School Yogyakarta is still using face-to-face learning and not utilizing the technological facilities provided by the school and preparing other alternative learning methods.

Given the current situation where the COVID-19 pandemic is spreading across all regions in Indonesia, this has led to the closure of all educational institutions. Educational institutions are experiencing difficulties because not all schools have prepared themselves to implement alternative learning methods such as distance learning or virtual learning. As a result, teachers only provide materials and assignments using simple applications such as WhatsApp, and if students want to discuss or ask questions, they must do so via phone or video call. Students feel burdened by the large number of assignments and the lack of direct explanation of the material, considering that they are still in a transition period because there has been no preparation for distance learning (virtual learning). Therefore, the researcher developed a virtual learning-based lesson plan using Google Classroom as a reference for teachers and students.

This study developed a virtual learning-based lesson plan using Google Classroom for fifth-grade elementary school students with thematic material, namely theme 1, sub-theme 1. The researcher's development will produce a virtual lesson plan and a virtual class that is ready for use by teachers. The lesson plan is used as an alternative learning method for teachers and students that has undergone expert validation and teacher assessment. The following is an image of the virtual class display created using Google Classroom.

Figure 1. Virtual class display using Google Classroom
(Source: Gusmiar's Personal Collection, 2020)

The research procedure for developing a virtual learning-based lesson plan using Google Classroom consists of 9 stages, namely data search and collection conducted through observation and direct observation at elementary schools, followed by the planning stage. At this stage, the researcher formulated a Virtual Learning Lesson Plan and Virtual Class design using Google Classroom and prepared additional media to make the class more interactive. The material used is thematic theme 1 sub-theme 1 with 6 lessons in grade 5 of elementary school.

The next stage is for the researcher to develop the initial product by searching for and

collecting thematic material for Theme 1 Sub-theme 1. After all materials are collected, the researcher prepares pretest questions, independent assignments, learning media, student worksheets (LKPD), and evaluation or posttest questions. The virtual class product design concept covers topics and content for each lesson, including instructions for using the virtual class, Core Competencies (KI), Basic Competencies (KD), indicators, learning objectives, learning materials, pretest questions, and independent assignments. Student worksheets, evaluation questions, and additional learning media are also included.

Core Competencies (Kompetensi Inti/KI) are general competency standards that describe the main abilities learners must achieve at each grade level, encompassing spiritual attitudes, social attitudes, knowledge, and skills. KI serves as an integrative framework that guides the development of learning activities and ensures coherence between attitudes, knowledge, and skills across subjects (Kemdikbud, 2018). Meanwhile, Basic Competencies (Kompetensi Dasar/KD) are more specific competencies derived from the KI that outline the minimum abilities students must master in a particular subject and learning topic. KD functions as a reference for formulating learning indicators, objectives, materials, assessments, and learning activities (Permendikbud No. 37 Tahun 2018). Therefore, the inclusion of KI and KD in the virtual class design ensures that learning activities and assessments are aligned with the national curriculum and support the achievement of expected learning outcomes in a structured and systematic manner.

Next is the initial field trial, which involves fifth-grade teachers at Muhammadiyah Suronatan Elementary School Yogyakarta to assess the quality of *virtual learning-based* lesson plans in the form of *virtual learning lesson* plans that refer to the characteristics of online lesson plans. Teachers provided assessments and feedback directly to the researchers. The next stage was product revision, where researchers made revisions based on the teachers' suggestions and feedback. The teachers' suggestions and feedback were as follows:

a) "The learning media is already interesting, but to make it even more interesting, the background of the learning media should be changed to match the children's theme." Grade 5/A Teacher.
b) "The lesson plan and virtual class are good, but the grammar needs to be improved," said the Grade V/B teacher.

The next stage is the main field trial, which still involves teachers, but this time the teachers assess the quality of the Virtual Learning and Virtual Class lesson plans using Google Classroom through a teacher response instrument that has been compiled by the researcher and contains assessments of the quality and content of the lesson plans and Virtual Class.

The results of the assessment conducted by the teachers are as follows:

Table 1. Assessment Results by Grade V Teachers

Teacher	Score
Grade V/A Teacher	95
Grade 5 Teacher/B	90
Total Score	**185**
Average	**92.5**
Category	**Very Good**

Based on the table above, the assessment results conducted by teachers of classes V A and B obtained an average score of 92.5, so the learning plan and virtual class developed by the researcher can be said to be in the "very good" category. This is followed by the next stage, which is the revision of operational products. At this stage, the researcher revises the assessment results, input, and suggestions from teachers conducted in the main field trial and prepares products ready for assessment, which will be given and assessed by experts.

The next stage is the operational field trial or expert validation, involving experts in curriculum, subject matter, and learning. This validation stage aims to determine the experts' assessment of the lesson plans and virtual classes developed by the researcher.

Before conducting validation with experts, researchers validated the instrument with instrument validators who would approve it. Then, experts validated the virtual learning-based learning plan using Google Classroom through an assessment instrument that had been approved by instrument validators. The assessment instrument was presented in the form of qualitative data containing questions developed by researchers.

The results of the assessment conducted by the validation are as follows:

Table 2. Assessment Results by Expert Validation

Expert Validation	Score
Curriculum Expert	75
Subject Matter Expert	75
Learning Specialist	90
Total Score	**240**
Average	**80**
Category	**Very Good**

Based on the table above, the assessment results conducted by curriculum experts, subject matter experts, and learning experts obtained an average score of 80, so the virtual learning-based lesson plan using Google Classroom is categorized as "very good." Therefore, it can be concluded from the assessment results by the experts that the virtual learning-based lesson plan and virtual class developed by the researcher are very suitable for use in the learning process.

In addition to providing assessments, the experts also provided suggestions and comments, namely:

Curriculum Expert

a) Providing input regarding teachers should give their opinions regarding the ease of understanding the learning design and their ability to apply it in the learning process.

Subject Matter Expert

a) Providing input on improving the creation of multiple-choice questions in pre-tests and post-tests, which must refer to the rules for creating questions.

Learning Expert

a) Provides input on improvements in the learning objectives that do not clearly indicate that the developed learning design is a distance learning or virtual learning design.
b) Complete the assessment rubric for all aspects, including cognitive, affective, and psychomotor skills.
c) And also create evaluation question grids.

Input from experts in the field is useful for improving *virtual learning-based* lesson plans to achieve the desired quality.

Teachers also provide suggestions and comments on the learning plan, namely:

a) "The lesson plans and *virtual* classes are good and easy to use, but there are improvements to be made in some of the pre-test and post-test questions (evaluation questions) as they are still incomplete because they only cover one subject." Based on these comments, it can be seen that *the virtual learning-based lesson* plans using *Google Classroom* are in line with the characteristics of online lesson plans and *virtual* classes required for fifth grade.
b) "The lesson plans and virtual classes are good and easy to use, but the group work activities need to be clarified." Based on this comment, it can be seen that the virtual

learning-based lesson plans using Google Classroom are in line with what teachers want, so that helps students learn in the learning process anytime and anywhere.

Based on the overall assessment of the product's suitability by curriculum experts, subject matter experts, learning experts, and homeroom teachers, the scores were accumulated and then averaged. The results of the accumulated assessment of the product's suitability can be seen in the following table.

Table 3. Product Feasibility Assessment Data

Assessment	Score
Expert Validation	80
Teacher Assessment	92
Total Score	**172.5**
Average	**86.25**
Category	**Highly Recommended**

Based on the table above, it can be seen that the assessment results for *the virtual learning-based* lesson plan using *Google Classroom* for fifth grade elementary school students with thematic material theme 1 sub-theme 1 obtained a total score of 172.5 and an average score of 86.25. These results show that *the Virtual Learning-Based* Lesson *Plan* Using *Google Classroom* obtained a "Very Good" category.

The assessment results described above indicate that distance learning requires the use of well-designed learning modules, as modules function not only as learning materials but also as self-instructional media that guide students to learn independently. Learning modules are structured teaching materials that systematically present learning objectives, content, activities, and evaluations, enabling students to control the pace, sequence, and depth of their learning without continuous teacher supervision (Depdiknas, 2008). In the context of distance learning, modules play a crucial role in compensating for the limited direct interaction between teachers and students. According to Prastowo (2015), modules support independent learning by providing clear instructions, contextual explanations, practice activities, and feedback mechanisms, which help students construct understanding autonomously. Furthermore, modules designed for online or blended learning environments have been shown to improve learning effectiveness, student engagement, and learning responsibility, as students can access materials repeatedly according to their individual learning needs (Widodo & Jasmadi, 2018). Therefore, the integration of modules into distance learning is not merely an alternative solution but a pedagogically necessary strategy to ensure learning continuity and quality. Modules enable students to remain actively involved in the learning process, even in the absence of face-to-face instruction, while supporting the development of self-regulated learning skills that are essential in digital learning environments (Hamdani, 2011; Rusman, 2017).

CONCLUSION

This study successfully developed a virtual learning–based lesson plan using Google Classroom through the Borg and Gall research and development model. The development process involved needs analysis, product design, field testing, revisions, and expert validation in the areas of curriculum, materials, and learning design. The validation results showed that the lesson plan achieved “Good” to “Very Good” categories from experts and teachers, with an overall average feasibility score of 86.25, classified as “Very Feasible.” Therefore, the virtual learning–based lesson plan using Google Classroom for Grade 5 students at Muhammadiyah

Suronatan Elementary School Yogyakarta on Thematic Theme 1 Subtheme 1 is highly suitable for use in learning activities.

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AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Investigation; Project administration; Validation; Writing – review and editing; Data curation; Formal analysis; Methodology; Writing – original draft; Resources; Visualization.

Author 2: Validation; Formal analysis; Other contributions; Resources; Supervision.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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