

**PENGEMBANGAN LAB VIRTUAL JARINGAN KOMPUTER UNTUK
MATA PELAJARAN ADMINISTRASI INFRASTRUKTUR JARINGAN DI
SMK NEGERI 3 NEGARA**

Oleh

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ABSTRAK

Penelitian ini dilatar belakangi oleh kurangnya pemahaman siswa terhadap proses belajar pada mata pelajaran Administrasi Infrastruktur Jaringan terutama dalam proses pembelajaran praktikum yang di mana dalam proses pembelajaran guru memberikan modul berupa PDF yang memuat beberapa ilustrasi gambar yang bersumber dari buku paket dan juga pada saat melakukan praktikum dalam laboratorium kurangnya peralatan yang memenuhi standar minimum dalam melakukan praktik. Dalam penelitian ini diharapkan mampu mengatasi masalah sarana dan prasarana siswa dalam mengikuti proses belajar mengajar khususnya dalam kegiatan praktik. Dalam penelitian ini metode pengembangan yang digunakan yaitu *Research and Development (R&D)* dengan model pengembangan ADDIE dan NDLC. ADDIE terdiri dari 5 tahapan yaitu Analysis – Design – Development – Implementation – Evaluasi dan NDLC terdapat 6 tahapan yaitu Analysis – Design - Simulation Prototyping – Implementation – Monitoring – Management. Subjek pada penelitian ini adalah peserta didik kelas XI TKJ di SMK Negeri 3 Negara yang berjumlah 29 siswa. Hasil analisis data pada penelitian ini menunjukkan bahwa pengembangan Laboratorium Virtual Jaringan Komputer berbasis *flipped classroom* mata pelajaran Administrasi Infrastruktur Jaringan untuk materi VLAN dan Routing Dinamis dinyatakan valid, efektif, dan praktis untuk digunakan dalam proses pembelajaran. Hal tersebut berdasarkan: (1) Penilaian ahli isi, media, dan desain pembelajaran memperoleh nilai 1,00 yang termasuk dalam tingkat validitas “Sangat Tinggi”. (2) Penilaian hasil perhitungan uji respon peserta didik dan guru memperoleh rata-rata sebesar 57,3 dan 49 sehingga tergolong kriteria “Praktis” dan “Sangat Praktis”. (3) Angket uji efektivitas dengan memberikan pretest dan posttest memperoleh hasil perhitungan *N-Gain* sebesar 0,95 yang termasuk dalam interpersasi “Efektif”.

Kata kunci: Laboratorium Virtual, *Flipped Classroom*, Administrasi Infrastruktur Jaringan.

**DEVELOPMENT OF VIRTUAL LAB COMPUTER NETWORK COURSE
NETWORK INFRASTRUCTURE ADMINISTRATION OF SMK NEGERI 3
NEGARA**

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ABSTRACT

This research is motivated by the lack of students' understanding of the learning process in the subject of Network Infrastructure Administration, especially in the practicum learning process where in the learning process the teacher provides a module in the form of a PDF which contains several illustrated images sourced from textbooks and also during practicum in laboratory lack of equipment that meets minimum standards in carrying out practice. In this study, it is expected to be able to overcome the problems of students' facilities and infrastructure in participating in the teaching and learning process, especially in practical activities. In this study the development method used is Research and Development (R&D) with ADDIE and NDLC development models. ADDIE consists of 5 stages, namely Analysis - Design - Development - Implementation - Evaluation and NDLC there are 6 stages, namely Analysis - Design - Simulation Prototyping - Implementation - Monitoring - Management. The subjects in this study were students of class XI TKJ at SMK Negeri 3 Negara, totaling 29 people. The results of data analysis in this study indicate that the development of a Computer Network Virtual Laboratory based on flipped classroom subjects Network Infrastructure Administration for VLAN and Dynamic Routing material is declared valid, effective, and practical to be used in the learning process. This is based on: (1) The assessment of content, media, and learning design experts obtained a score of 1.00 which is included in the "Very High" validity level. (2) The assessment of the results of the student and teacher response test calculations obtained an average of 57.3 and 49 so that they were classified as "Practical" and "Very Practical" criteria. (3) The effectiveness test questionnaire by giving the pretest and posttest results in an N-Gain calculation of 0.95 which is included in the "Effective" interpretation.

Keyword: *Virtual Laboratory, Flipped Classroom, Network Infrastructure Administration.*