ABSTRAK

Yulvani Anggraeni Christine Limbong, 2021. Pengembangan Video Pembelajaran dan LKPD Berbasis *GeoGebra* pada Materi Trigonometri Kelas X SMA. Program Studi Pendidikan Matematika, Jurusan Pendidikan Matematika dan Ilmu Pengetahuan Alam, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Sanata Dharma.

Tujuan dari penelitian ini adalah 1) mengembangkan video pembelajaran dan LKPD berbasis *GeoGebra* pada materi trigonometri kelas X SMA; dan 2) mengetahui kualitas video pembelajaran dan LKPD yang dihasilkan ditinjau dari kevalidan dan efektivitasnya.

Metode penelitian ini adalah penelitian dan pengembangan dengan model ADDIE (*Analyze*, *Design*, *Development*, *Implementation*, *Evaluation*). Subjek penelitian ini yaitu siswa kelas XI MIPA 2 SMA Pangudi Luhur II Servasius Bekasi sebanyak 34 siswa. Metode pengumpulan data yang dilaksanakan pada penelitian ini adalah tes hasil belajar, uji validitas produk pengembangan, dan pengisian angket respon siswa. Teknik analisis data yang digunakan adalah menghitung persentase nilai siswa yang tuntas KKM, persentase rata-rata skor angket, dan rata-rata skor validasi beserta persentasenya.

Proses pengembangan video pembelajaran dan LKPD diawali tahap analisis (*analyze*) meliputi analisis batasan materi yaitu trigonometri kelas X SMA dan analisis media pembelajaran. Diperoleh bahwa dibutuhkan media pembelajaran untuk materi relasi sudut trigonometri. Tahap desain (*design*) meliputi merancang program *GeoGebra*, merancangkan konsep video pembelajaran, dan merencanakan LKPD. Tahap pengembangan (*development*) merealisasikan rancangan pada tahap desain, selanjutnya video pembelajaran dan LKPD divalidasi oleh dua ahli. Tahap implementasi (*implementation*) dilakukan tahap uji coba terhadap video pembelajaran dan LKPD pada siswa kelas XI MIPA 2 SMA Pangudi Luhur II Servasius Bekasi. Tahap evaluasi (*evaluation*) meliputi menganalisis hasil validasi, tes, dan angket respon siswa terhadap video pembelajaran dan LKPD. Kualitas video pembelajaran dan LKPD yang dikembangkan valid dan efektif. Hasil validasi video pembelajaran memperoleh rata-rata skor 4,09 dari 5 dan persentase validitas sebesar 81,82% dengan kategori cukup valid. Hasil validasi LKPD memperoleh rata-rata 4,42 dari 5 dan persentase validitas sebesar 88,33% dengan kategori sangat valid. Hasil rata-rata nilai tes siswa yaitu 84,22. Sebanyak 29 siswa tuntas KKM. Hasil angket respon siswa terhadap video pembelajaran diperoleh persentase sebesar 75% dengan kategori baik. Hasil angket respon siswa terhadap LKPD pembelajaran diperoleh persentase sebesar 76% dengan kategori baik. Hal tersebut menunjukkan bahwa video pembelajaran dan LKPD dapat digunakan dalam pembelajaran dan dapat merepresentasikan materi terkait relasi sudut trigonometri.

Kata Kunci: video pembelajaran, LKPD, *GeoGebra*, kualitas pengembangan

ABSTRACT

Yulvani Anggraeni Christine Limbong, 2021. The Development of GeoGebra-Based Learning Videos and Worksheets on Trigonometry for Class X High School. Mathematics Education Study Program, Department of Mathematics and Natural Sciences Education, Faculty of Teacher Training and Education, Sanata Dharma University.

The purpose of this research is 1) to develop GeoGebra-based learning videos and worksheets on trigonometry for class X high school; and 2) to find out the quality resulting from the validity and effectiveness.

This research method is research and development with the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). The subjects of this study were 34 students of class XI MIPA 2 SMA Pangudi Luhur II Servasius Bekasi. The data collection methods carried out in this study were tests, validity tests, and filling out questionnaires. The data analysis technique used is to calculate the percentage of student scores who have completed the KKM, the average percentage of the questionnaire score, and the average validation score and its percentage.

The process of developing learning videos and LKPD begins with the analysis phase which includes analysis of material limits, namely trigonometry for class X SMA and analysis of learning media. It was found that learning media was needed for trigonometric angle relations material. The design phase includes designing the GeoGebra program, designing the concept of learning videos, and planning the worksheets. The development stage includes realizing the design at the design stage, then the learning videos and worksheets are validated by two experts. The implementation phase was carried out in a field trial of learning videos and worksheets for class XI MIPA 2 SMA Pangudi Luhur II Servasius Bekasi. The evaluation phase analyzes the results of validation, tests, and student responses to learning videos and worksheets. The quality of the learning videos and worksheets developed is valid and effective in terms of mathematical representation abilities. The results of the learning videos validation obtained an average score of 4.09 out of 5 and the percentage of validity was 81.82% with a quite valid category. The results of the worksheets validation obtained an average of 4.42 out of 5 and the percentage was 88.33% with a very valid category. The students' average test scores were 84.22. A total of 29 students score completed the KKM. The result of the student response questionnaire to the learning videos obtained a percentage of 75% with a good category. The result of the student response questionnaire to the learning LKPD obtained 76% with a good category. This shows that learning videos and worksheets can be used in learning and can represent material related to trigonometric angle relations.

Keywords: *learning videos, worksheets, GeoGebra, quality of development*