ABSTRAK

Penelitian ini bertujuan untuk: (1) mendeskripsikan proses dan hasil kualitas pengembangan modul ajar berdiferensiasi model inkuiri dengan pendekatan paradigma pedagogi reflektif pada materi lingkaran untuk memfasilitasi kemampuan representasi dan komunikasi matematis siswa kelas XI di SMK N 2 Depok Yogyakarta; (2) mengetahui modul ajar yang dikembangkan dapat memfasilitasi kemampuan representasi dan komunikasi matematis siswa kelas XI di SMK N 2 Depok Yogyakarta.

Penelitian ini merupakan penelitian pengembangan dengan menggunakan model ADDIE (*Analysis, Design, Development, Implementation, and Evaluation*). Subjek dari penelitian ini adalah siswa kelas XI Kimia Analisis SMK Negeri 2 Depok Yogyakarta. Teknik pengumpulan data dalam penelitian ini menggunakan observasi proses pembelajaran, wawancara, tes kemampuan awal, tes formatif, angket, dan validasi modul ajar.

Hasil penelitian ini yaitu: (1) penelitian ini mengembangkan modul ajar dengan model pengembangan ADDIE. Pada tahap *analyze*, dilakukan analisis kinerja dan kebutuhan. Pada tahap *design*, peneliti menyusun rancangan modul ajar. Pada tahap *development*, rancangan modul direalisasikan dengan melakukan validasi dan revisi berdasarkan saran validator. Tahap *implementation* dilakukan dengan menerapkan hasil pengembangan modul dalam pembelajaran. Terakhir, pada tahap *evaluation*, modul dievaluasi dari segi kualitas. Hasil evaluasi menunjukkan bahwa tingkat kevalidan modul mencapai 81% (kategori valid), tingkat kepraktisan sebesar 96% (kategori sangat praktis), dan tingkat keefektifan sebesar 78% (kategori efektif). (2) Pada kemampuan representasi matematis sebagian besar siswa telah mencapai indikator, dengan persentase sebesar 78%. Sementara itu, kemampuan komunikasi matematis menunjukkan persentase sebesar 84% siswa telah memenuhi indikator yang ditetapkan. Dengan demikian, modul ajar yang telah dikembangkan terbukti dapat memfasilitasi kemampuan representasi dan komunikasi matematis siswa dalam proses pembelajaran.

Kata kunci: Modul Ajar, ADDIE, Representasi Matematis, Komunikasi Matematis, Lingkaran.

ABSTRACT

This study aims to: (1) describe the process and quality results of developing differentiated teaching modules of inquiry model with reflective pedagogy paradigm approach on circle material to facilitate mathematical representation and communication skills of grade XI students at SMK N 2 Depok Yogyakarta; (2) find out the teaching modules developed can facilitate the mathematical representation and communication skills of grade XI students at SMK N 2 Depok Yogyakarta.

This research is a development research using ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The subjects of this research are students of class XI Chemistry Analysis of SMK Negeri 2 Depok Yogyakarta. Data collection techniques in this study used observation of the learning process, interviews, initial ability tests, formative tests, questionnaires, and validation of teaching modules.

The results of this study are: (1) this study developed teaching modules with the ADDIE development model. At the analyze stage, performance and needs analysis were carried out. At the design stage, researchers compiled a teaching module design. At the development stage, the module design was realized by conducting validation and revision based on the validator's suggestions. The implementation stage is carried out by applying the results of module development in learning. Finally, at the evaluation stage, the module is evaluated in terms of quality. The evaluation results showed that the validity level of the module reached 81% (valid category), the practicality level was 96% (very practical category), and the effectiveness level was 78% (effective category). (2) In mathematical representation ability most students have achieved the indicators, with a percentage of 78%. Meanwhile, mathematical communication skills showed a percentage of 84% of students had met the set indicators. Thus, the teaching module that has been developed is proven to facilitate students' mathematical representation and communication skills in the learning process.

***Keywords**: Teaching Module, ADDIE, Mathematical Representation, Mathematical Communication, Circle.*