ABSTRAK

PENGEMBANGAN E-MODUL INTERAKTIF BERBASIS *DISCOVERY LEARNING* PADA MATERI IKATAN KOVALEN FASE F KURIKULUM MERDEKA

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Kimia merupakan mata pelajaran yang dianggap sulit oleh banyak peserta didik, khususnya pada materi ikatan kovalen yang bersifat abstrak dan membutuhkan pemahaman konseptual yang mendalam. Pada mata pelajaran kimia di SMA Stella Duce 2 masih umumnya masih menggunakan *e-book* sebagai sumber belajar yang pada umumnya tidak ada elemen interaktif yang biasanya ada pada e-modul. Dalam konteks penerapan Kurikulum Merdeka tahun 2024 yang menekankan pembelajaran yang mandiri, dilakukan penelitian ini yaitu mengembangkan e-modul interaktif berbasis *discovery learning* pada materi ikatan kovalen. Tujuan dari penelitian ini yaitu: (1) mengembangkan e-modul interaktif berbasis *discovery learning* pada materi ikatan kovalen pada fase F Kurikulum Merdeka dan (2) mengetahui validitas, efektivitas, dan kepraktisan e-modul interaktif berbasis *discovery learning* pada materi ikatan kovalen pada fase F Kurikulum Merdeka. Metode yang digunakan adalah *Research and Development* (R&D) dengan model 4D yang dimodifikasi menjadi 3D yaitu *Define*, *Design*, dan *Develop*. Tahap *Define* meliputi analisis kebutuhan, *Design* mencakup rancangan e-modul interaktif, dan *Develop* melibatkan validasi serta uji coba terbatas. Sampel penelitian ini yaitu 10 peserta didik kelas XI SMA Stella Duce 2 Yogyakarta. Hasil penelitian menunjukkan bahwa: (1) produk e-modul interaktif berbasis *discovery learning* pada materi ikatan kovalen telah dikembangkan, (2) e-modul yang dikembangkan memenuhi kriteria sangat valid rata-rata validitas 88,67%, e-modul memenuhi kriteria sangat efektif dengan rata-rata nilai peserta didik 84,2, dan e-modul mendapat respons positif peserta didik dengan rata-rata 90,2% dengan kriteria sangat praktis. Berdasarkan hasil pengembangan dan uji coba, e-modul interaktif layak digunakan dalam pembelajaran kimia pada materi ikatan kovalen fase F Kurikulum Merdeka.

Kata kunci: *discovery learning*, e-modul, ikatan kovalen, kurikulum merdeka.

ABSTRACT

DEVELOPMENT OF INTERACTIVE E-MODULES BASED ON DISCOVERY LEARNING ON COVALENT BONDING MATERIAL PHASE F MERDEKA CURRICULUM

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Chemistry is a subject that is considered difficult by many students, especially the material on covalent bonds which is abstract and requires deep conceptual understanding. In the chemistry subject at SMA Stella Duce 2, e-books are still generally used as learning resources which generally do not have interactive elements that are usually found in e-modules. In the context of the implementation of the 2024 Merdeka Curriculum which emphasizes independent learning, this research was conducted to develop an interactive e-module based on discovery learning on the material on covalent bonds. The objectives of this research are: (1) to develop an interactive e-module based on discovery learning on the material on covalent bonds in phase F of the Merdeka Curriculum and (2) to determine the validity, effectiveness, and practicality of the interactive e-module based on discovery learning on the material on covalent bonds in phase F of the Merdeka Curriculum. The method used is Research and Development (R&D) with a 4D model modified into 3D, namely Define, Design, and Develop. The Define stage includes needs analysis, Design includes the design of the interactive e-module, and Develop involves validation and limited trials. The sample of this study was 10 students of grade XI SMA Stella Duce 2 Yogyakarta. The results of the study showed that: (1) an interactive e-module product based on discovery learning on the topic of covalent bonds has been developed, (2) the developed e-module meets the criteria of very valid with an average validity of 88.67%, the e-module meets the criteria of very effective with an average student score of 84.2, and the e-module received a positive response from students with an average of 90.2% with the criteria of very practical. Based on the results of the development and trials, the interactive e-module is suitable for use in chemistry learning on the topic of covalent bonds in phase F of the Merdeka Curriculum.

Keywords: *covalent bonds, discovery learning, e-module, merdeka curriculum.*