

ABSTRAK

PENGEMBANGAN E-MODUL INTERAKTIF PEMBELAJARAN KIMIA MENGUNAKAN MODEL *GUIDED INQUIRY* DENGAN PENDEKATAN *DILEMMA STORIES* PADA MATERI ASAM BASA

Magdalena Helnis Paul
Universitas Sanata Dharma

Materi asam basa merupakan salah satu materi kimia yang tergolong kompleks dan abstrak sehingga sering menimbulkan miskonsepsi pada peserta didik. Studi pendahuluan di SMA St. Maria Yogyakarta menunjukkan bahwa peserta didik mengalami miskonsepsi dalam menentukan nilai pH akibat kekeliruan menerapkan rumus asam basa, dengan 50% peserta didik berada di bawah Kriteria Ketercapaian Tujuan Pembelajaran (KKTP). Selain itu, studi pendahuluan juga mengungkapkan bahwa pembelajaran masih didominasi metode ceramah, keterbatasan bahan ajar, serta pemanfaatan teknologi yang belum dioptimalkan sebagai sarana belajar. Penelitian ini bertujuan untuk mendeskripsikan proses pengembangan e-modul interaktif pembelajaran kimia menggunakan model *guided inquiry* dengan pendekatan *dilemma stories* pada materi asam basa, serta mengetahui kelayakannya dari aspek validitas, efektivitas, dan praktikalitas dalam memfasilitasi kemampuan berpikir kritis peserta didik. Penelitian ini merupakan penelitian pengembangan (R&D) yang memodifikasi model 4D menjadi 3D, meliputi tahap *define*, *design*, dan *develop*. Subjek uji coba terbatas terdiri atas 8 peserta didik SMA. Kelayakan produk diuji melalui validasi oleh tiga ahli, uji efektivitas melalui tes formatif berdasarkan lima indikator keterampilan berpikir kritis menurut Facione, yaitu interpretasi, analisis, evaluasi, inferensi, dan eksplanasi, serta uji praktikalitas melalui angket respons peserta didik. Hasil penelitian menunjukkan bahwa produk e-modul memperoleh rata-rata skor validitas sebesar 91,62%, butir soal tes formatif sebesar 89,94%, dan angket respons peserta didik sebesar 96,38%, seluruhnya berkategori sangat valid. Adapun hasil uji efektivitas menunjukkan bahwa e-modul mampu memfasilitasi keterampilan berpikir kritis peserta didik dengan capaian rata-rata sebesar 81,5% berkategori sangat baik. Hasil uji praktikalitas menunjukkan skor rata-rata sebesar 82,5% berkategori sangat praktis. Berdasarkan temuan tersebut, e-modul interaktif berbasis *guided inquiry* dengan pendekatan *dilemma stories* dinyatakan valid, efektif, dan praktis dalam memfasilitasi keterampilan berpikir kritis peserta didik pada materi asam basa.

Kata kunci: asam basa, berpikir kritis, *dilemma stories*, e-modul interaktif, *guided inquiry*

ABSTRACT

**DEVELOPMENT OF AN INTERACTIVE CHEMISTRY E-MODULE USING
A GUIDED INQUIRY MODEL WITH A DILEMMA STOREIS APPROACH
TO ACID-BASE TOPICS**

Magdalena Helnis Paul
Sanata Dharma University

Acid-base is one of the chemistry topics considered complex and abstract, often leading to misconceptions among students. A preliminary study at SMA St. Maria Yogyakarta revealed that students experienced misconceptions in determining pH values due to errors in applying acid-base formulas, with 50% of students falling below the Learning Achievement Criteria (KKTP). Furthermore, the preliminary study also revealed that learning remained dominated by lecture-based methods, limited teaching materials, and the underutilization of technology as a learning medium. This study aimed to describe the development process of an interactive e-module for chemistry learning using the guided inquiry model combined with the dilemma stories approach on acid-base topics, as well as to determine its feasibility in terms of validity, effectiveness, and practicality in facilitating students' critical thinking skills. This research and development (R&D) study modified the 4D model into a 3D model, consisting of the define, design, and develop stages. The limited trial subjects consisted of eight senior high school students. Product feasibility was assessed through validation by three experts, an effectiveness test through a formative test based on five critical thinking indicators according to Facione, namely interpretation, analysis, evaluation, inference, and explanation, and a practicality test using a student response questionnaire. The results showed that the e-module obtained an average validity score of 91.62%, the formative test items obtained an average score of 89.94%, and the student response questionnaire obtained a validity score of 96.38%, all categorized as highly valid. The effectiveness test showed that the e-module was able to facilitate students' critical thinking skills with an average achievement of 81.5%, categorized as very good. The practicality test showed an average score of 82.5%, categorized as highly practical. Based on these findings, the interactive e-module based on guided inquiry with the dilemma stories approach was found to be valid, effective, and practical in facilitating students' critical thinking skills on acid-base topics.

Keywords: acid-base, critical thinking, dilemma stories, guided inquiry, interactive e-module