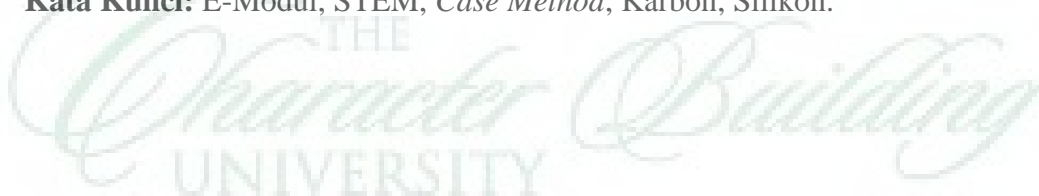# ABSTRAK

Krisna Rahayu, NIM 4192431019 (2023). Pengembangan E-Modul STEM Berbasis *Case Method* pada Materi Karbon dan Silikon.

Sains, Technology, Engineering, and Mathematics (STEM) adalah solusi pembelajaran alternatif untuk abad ke-21. Kemajuan teknologi membuat media pendidikan mengalami perubahan, yaitu dengan penggunaan media *soft copy* berupa modul elektronik. Penelitian ini bertujuan untuk: (1) Mendeskripsikan karakteristik e-modul STEM berbasis *case method* pada materi karbon dan silikon; (2) Menentukan validitas e-modul STEM berbasis *case method* pada materi karbon dan silikon; (3) Mendeskripsikan respon peserta didik terhadap e-modul STEM berbasis *case method* pada materi karbon dan silikon; (4) Mendeskripsikan respon guru kimia terhadap e-modul STEM berbasis *case method* pada materi karbon dan silikon. Sampel yang dipilih dalam penelitian ini yaitu tiga dosen kimia Unimed, satu dosen ilmu komputer, satu dosen PTIK, dan dua guru kimia di SMA Negeri 1 Kisaran, serta respon oleh 36 orang peserta didik di kelas XII IPA 5. Model pengembangan yang digunakan adalah Model ADDIE. Instrumen yang digunakan berupa lembar wawancara, angket analisis kebutuhan, lembar analisis bahan ajar, lembar validasi e-modul berdasarkan BSNP, angket respon peserta didik, dan angket respon guru kimia. Hasil penelitian menunjukkan bahwa (1) E-Modul yang dikembangkan memiliki karakteristik terintegrasi STEM, *case method* dan memuat fitur yang menarik; (2) E-Modul STEM berbasis *case method* pada materi karbon dan silikon dinyatakan "sangat valid" dengan persentase rata-rata ahli materi sebesar 93,17% dan ahli media sebesar 94,39%; (3) Respon peserta didik kelas XII IPA 5 SMA Negeri 1 Kisaran terhadap e-modul yang dikembangkan yaitu dikategorikan "sangat praktis" dengan persentase rata-rata 87,54%; (4) Respon guru kimia terhadap e-modul yang dikembangkan yaitu dikategorikan "sangat praktis" dengan persentase rata-rata 97,39%.

Kata Kunci: E-Modul, STEM, *Case Method*, Karbon, Silikon.

ABSTRACT

Krisna Rahayu, NIM 4192431019 (2023). Development of Case Method-Based STEM E-Modules on Carbon and Silicon Materials.

Science, Technology, Engineering, and Mathematics (STEM) is an alternative learning solution for the 21st century. Advances in technology have made educational media change, namely the use of soft copy media in the form of electronic modules. This research aims to: (1) describe the characteristics of case method-based STEM e-modules on carbon and silicon materials; (2) determine the validity of case method-based STEM e-modules on carbon and silicon materials; (3) describe students' responses to case method-based STEM e-modules on carbon and silicon materials; (4) describe chemistry teachers' responses to case method-based STEM e-modules on carbon and silicon materials. The samples selected in this study were three Unimed chemistry lecturers, one computer science lecturer, one PTIK lecturer, and two chemistry teachers at SMA Negeri 1 Kisaran, as well as responses by 36 students in class XII IPA 5. The development model used was the ADDIE model. The instruments used were interview sheets, needs analysis questionnaires, teaching material analysis sheets, e-module validation sheets based on BSNP, student response questionnaires, and chemistry teacher response questionnaires. The results showed that (1) the developed E-Module has STEM integrated characteristics, case method and contains interesting features; (2) Case method-based STEM E-Module on carbon and silicon material was declared "very valid" with an average percentage of material experts of 93.17% and media experts of 94.39%; (3) The response of students of class XII IPA 5 SMA Negeri 1 Kisaran to the developed e-module is categorized as "very practical" with an average percentage of 87.54%; (4) The chemistry teacher's response to the developed e-module is categorized as "very practical" with an average percentage of 97,39%.

Keywords: E-Module, STEM, Case Method, Carbon, Silicon.