# ABSTRAK

**Albert Bitara Hasudungan Silitonga, NIM 4181141030 (2022). Pengembangan *E-modul* Interaktif Berbasis Model Stecs Untuk Siswa SMA Kelas X di SMA Negeri 13 Medan Pada Materi Perubahan Lingkungan**

Penelitian dan pengembangan ini dilakukan untuk menghasilkan media pembelajaran berupa *e-modul* interaktif berbasis STEcS dengan bantuan aplikasi *Flip PDF Professional* yang memenuhi kategori valid, praktis, dan efektif. Sehingga berguna untuk siswa dalam meningkatkan pemahaman pada materi perubahan lingkungan khusunya pada submateri pencemaran lingkungan dan upaya pelestariannya. Instrumen penelitian yang dipakai yakni instrumen pembelajaran, lembar penilaian kelayakan isi dan kelayakan penyajian *e-modul*, *pretest* dan *posttest*, serta angket penilaian guru dan siswa. Setelah seluruh instrumen, RPP, dan *e-modul* dalam kategori valid, kemudian dilakukan uji coba lapangan terhadap proses pembelajaran. Hasil penelitian menunjukkan bahwa: (1) *E-modul* dalam kriteria valid ditinjau dari aspek kelayakan isi dan kelayakan penyajian *e-modul* yaitu (95,83% dan 96,78%) dengan kategori sangat layak; (2) *E-modul* telah memenuhi nilai kepraktisan dari hasil penilaian guru dan siswa yaitu (87,53% dan 88,45%) pada kategori sangat praktis; (3) *E-modul* memenuhi kriteria efektif dengan ketuntasan hasil belajar siswa telah mencapai 100% siswa yang memperoleh nilai ≥75. Berdasarkan analisis nilai hasil belajar siswa *pretest* dan *posttest* didapat N-Gain sebesar 0,69 (termasuk dalam kategori sedang) sehingga dapat dikatakan memberikan efektivitas hasil belajar siswa.

**Kata Kunci**: *E-modul* interaktif, *Flip PDF Professional*, STEcS, perubahan lingkungan

# ABSTRACT

**Albert Bitara Hasudungan Silitonga, NIM 4181141030 (2022). *Development* of an Interactive *E-module* Based on the STEcS Model for Class X High School Students at SMA Negeri 13 Medan on Environmental Change Materials.**

This research and development was conducted to produce learning media in the form of STEcS-based interactive *e-module*s with the help of a professional flip PDF application that met the valid, practical, and effective categories. So that it is useful for students in increasing understanding of the material of environmental change, especially in the submaterial of environmental pollution and its conservation efforts. The research instrumen used were learning instrumen, content feasibility assessment sheets and the feasibility of presenting e-modules, pretest and posttest, as well as teacher and student assessment questionnaries. After all instrumens, learning instrumen, and e-modules are in the valid category, then a field trial is carried out on the learning process. The results showed that: (1) the E-module had valid criteria in terms of the feasibility of the content and the feasibility of presenting the e-module, namely (95.83% and 96.78%) with a very feasible category; (2) the E-module has met the practical value of the results of teacher and student assessments, namely (87.53% and 88.45%) in the very practical category; (3) The E-module meets the effective criteria with the completeness of student learning outcomes reaching 100% of student who get a score of 75. Based on the Analysis of the value of student learning outcomes pretest and posttest obtained N-Gain of 0.69 (include in the medium category) so that it can be said to provide the effectiveness of student learning outcomes.

**Keywords**: Interactive e-module, Flip PDF Professional, STEcS, environmental change