# ABSTRAK

**Heru Armansyah. NIM. 5192421003. Pengembangan Modul Elektronik Pembelajaran Dasar Perancangan Teknik Mesin Untuk Peserta Didik Kelas X SMK Negeri 14 Medan. Skripsi. Jurusan Pendidikan Pendidikan Teknik Mesin, Fakultas Teknik Universitas Negeri Medan. 2023.**

Penelitian ini bertujuan untuk: (1) menghasilkan modul elektronik pada mata pelajaran Dasar Perancangan Teknik Mesin kelas X TP SMK, (2) mengetahui tingkat kelayakan modul elektronik pada mata Pelajaran Dasar Perancangan Teknik Mesin kelas X TP SMK dan (3) mengetahui efektivitas penggunaan produk modul elektronik dalam meningkatkan capaian hasil belajar mata pelajaran Dasar Perancangan Teknik Mesin kelas X TP SMK. Penelitian pengembangan ini mengacu pada langkah-langkah yang dikembangkan oleh Dick and Carry yaitu ADDIE. Prosedur pengembangan meliputi 1) *Analysis* (Analisis), (2) *Design* (Desain), (3) *Development* (Pengembangan), (4) *Implementation* (Implementasi), dan (5) *Evaluation* (Evaluasi). Subjek uji coba lapangan sebanyak 34 peserta didikkelas X TP SMK Negeri 14 Medan. Pengumpulan data menggunakan lembar penilaian, angket respon, dan tes hasil belajar. Hasil penelitian menunjukkan bahwa modul elektronik permesinan dinyatakan layak digunakan sebagai bahan ajar disekolah dengan perolehan rata-rata skor ahli materi 1 sebesar 89,39%, ahli materi 2 sebesar 91,66% lalu perolehan rata-rata skor ahli media 1 sebesar 92,59%, dan perolehan rata-rata skor ahli media 2 sebesar 88,88% perolehan rata-rata skor uji coba kelompok kecil sebesar 83,02% dan respon peserta sebagai pengguna sebesar 95,55% sehingga kelayakan modul elektronik sejarah yang dikembangkan masuk kedalam kategori "sangat baik". Keefektifan modul elektronik permesinan dianalisis berdasarkan hasil *pre-test* dan *post-test*, diperoleh bahwa nilai *pre-test* lebih rendah dibanding *post-test* masing-masing diperoleh 41 dan 81. Persentase N-Gain yang didapatkan adalah 68% dengan kategori "cukup efektif". Melalui hasil penilaian kelayakan dan keefektifan tersebut diperoleh hasil bahwa produk modul elektronik permesinan untuk kelas X TP SMK Negeri 14 Medan sangat layak dan cukup efektif digunakan dalam proses pembelajaran dasar perancangan teknik mesin.

**Kata kunci**: pengembangan bahan ajar, modul elektronik, pengetahuan jenis bahan teknik, permesinan

## ABSTRACT

**Heru Armansyah. NIM. 5192421003. Development of an Electronic Module for Basic Learning of Mechanical Engineering Design for Class X Students at SMK Negeri 14 Medan. Thesis. Department of Mechanical Engineering Education, Faculty of Engineering, Medan State University. 2023.**

This research aims to: (1) produce an electronic module in the Basic Mechanical Engineering Design subject class X TP SMK, (2) determine the level of feasibility of the electronic module in the Basic Mechanical Engineering Design subject class electronic module in improving learning outcomes in the Basic Mechanical Engineering Design subject for class X TP SMK. This development research refers to the steps developed by Dick and Carry, namely ADDIE. Development procedures include 1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. The field trial subjects were 34 students of class X TP SMK Negeri 14 Medan. Data collection uses assessment sheets, response questionnaires, and learning outcomes tests. The results of the research showed that the electronic machinery module was declared suitable for use as teaching material in schools with an average score obtained by material expert 1 of 89.39%, material expert 2 of 91.66% and an average score obtained by media expert 1 of 92.59 %, and the average score of media expert 2 was 88.88%, the average score of small group trials was 83.02% and the response of participants as users was 95.55% so that the feasibility of the electronic history module being developed fell into the category "Very good". The effectiveness of the electronic machinery module was analyzed based on the results of the pre-test and post-test, it was found that the post-test score was higher than the pre-test, respectively, 81 and 41. The N-Gain percentage obtained was 68% in the "quite effective" category Through the results of the feasibility and effectiveness assessment, the result was that the electronic machining module product for class X TP SMK Negeri 14 Medan was very feasible and quite effective for use in the basic learning process of mechanical engineering design.



**Keywords:** development of teaching materials, electronic modules, knowledge of types of engineering materials, machinery