

ABSTRAK

Wahyu Simangunsong. Pengembangan Game Edukasi Berbasis Android dengan Self-Directed Learning pada Mata Pelajaran Dasar Teknik Komputer dan Jaringan. Skripsi. Program Studi Pendidikan Teknologi Informatika dan Komputer, Fakultas Teknik, Universitas Negeri Medan, 2026.

Penelitian ini bertujuan untuk mengembangkan game edukasi berbasis Android dengan pendekatan *Self-Directed Learning* (SDL), mengetahui tingkat validitas dan kepraktisan produk, serta menganalisis perbedaan peningkatan minat belajar dan kemandirian belajar siswa pada mata pelajaran Dasar Teknik Komputer dan Jaringan (DTKJ). Penelitian dilaksanakan di SMK Negeri 1 Percut Sei Tuan dengan menggunakan metode *Research and Development* (R&D) melalui model ADDIE yang meliputi tahap *Analysis, Design, Development, Implementation, dan Evaluation*. Pengujian efektivitas produk menggunakan desain eksperimen semu tipe *pretest-posttest control group design*. Sampel penelitian terdiri atas 48 siswa, yaitu 25 siswa kelas X TKJ 1 sebagai kelas eksperimen yang menggunakan game edukasi berbasis Android dengan SDL dan 23 siswa kelas X TKJ 2 sebagai kelas kontrol yang mengikuti pembelajaran konvensional. Produk dikembangkan menggunakan Android Studio dengan bahasa pemrograman Java serta mengintegrasikan tahapan SDL berupa *planning, implementing, monitoring, dan evaluating*. Data dikumpulkan melalui lembar validasi ahli materi dan ahli media, angket kepraktisan guru dan siswa, serta angket minat belajar dan kemandirian belajar. Data dianalisis menggunakan analisis deskriptif, N-Gain ternormalisasi, uji normalitas, uji homogenitas, dan uji *Mann-Whitney U*. Hasil penelitian menunjukkan bahwa produk memperoleh persentase validasi ahli materi sebesar 91,30% (kategori sangat valid) dan validasi ahli media sebesar 79,30% (kategori layak), masing-masing dinilai oleh dua orang validator. Penilaian kepraktisan oleh guru memperoleh persentase 89,33%, sedangkan kepraktisan oleh siswa sebesar 89,39%, dan keduanya termasuk kategori sangat praktis. Rata-rata N-Gain minat belajar kelas eksperimen sebesar 0,870, lebih tinggi daripada kelas kontrol sebesar 0,197, dengan nilai *U* Mann-Whitney sebesar 575 ($Z = 5,933$) dan signifikansi $p < 0,001$. Rata-rata N-Gain kemandirian belajar kelas eksperimen sebesar 0,862, lebih tinggi daripada kelas kontrol sebesar 0,193, dengan nilai *U* Mann-Whitney sebesar 575 ($Z = 5,933$) dan signifikansi $p < 0,001$. Dengan demikian, game edukasi berbasis Android dengan pendekatan SDL dinyatakan valid, sangat praktis, dan efektif untuk meningkatkan minat serta kemandirian belajar siswa pada mata pelajaran DTKJ.

Kata kunci: Game Edukasi, Android, *Self-Directed Learning*, Minat Belajar, Kemandirian Belajar.

ABSTRACT

Wahyu Simangunsong. Development of an Android-Based Educational Game with Self-Directed Learning for the Fundamentals of Computer and Network Engineering Subject. Undergraduate Thesis. Informatics and Computer Technology Education Study Program, Faculty of Engineering, Universitas Negeri Medan, 2026.

This study aimed to develop an Android-based educational game incorporating the *Self-Directed Learning* (SDL) approach, determine the validity and practicality of the product, and analyze differences in the improvement of students' learning interest and learning independence in the Fundamentals of Computer and Network Engineering subject. The study was conducted at SMK Negeri 1 Percut Sei Tuan using the *Research and Development* (R&D) method with the ADDIE model, consisting of the *Analysis, Design, Development, Implementation, and Evaluation* stages. The effectiveness of the product was examined using a quasi-experimental method with a *pretest-posttest control group design*. The research sample consisted of 48 students, including 25 students from class X TKJ 1 as the experimental group, who used the Android-based educational game with SDL, and 23 students from class X TKJ 2 as the control group, who received conventional instruction. The product was developed using Android Studio and the Java programming language and incorporated four SDL stages: *planning, implementing, monitoring, and evaluating*. Data were collected using material expert and media expert validation sheets, teacher and student practicality questionnaires, and questionnaires measuring learning interest and learning independence. The data were analyzed using descriptive statistics, normalized N-Gain, normality and homogeneity tests, and an *Mann-Whitney U test*. The results showed that the product obtained a material expert validation score of 91.30% (highly valid) and a media expert validation score of 79.30% (adequate), each assessed by two validators. The teacher practicality assessment reached 89.33%, while the student practicality assessment reached 89.39%, both categorized as highly practical. The mean N-Gain of learning interest in the experimental group was 0.870, higher than the control group's score of 0.197, with a *U* value of 575 ($Z = 5.933$) and a significance level of $p < 0.001$. The mean N-Gain of learning independence in the experimental group was 0.862, higher than the control group's score of 0.193, with a *U* value of 575 ($Z = 5.933$) and a significance level of $p < 0.001$. Therefore, the Android-based educational game incorporating the SDL approach was adequately valid, highly practical, and effective in improving students' learning interest and learning independence in the Fundamentals of Computer and Network Engineering subject.

Keywords: Educational Game, Android, *Self-Directed Learning*, Learning Interest, Learning Independence.