“YOUR ZERO HOUR”: *VISUAL NOVEL INTERACTIVE GAME* BERBASIS *ADAPTIVE LEARNING* SEBAGAI MEDIA PEMBELAJARAN KEAMANAN SIBER *RANSOMWARE*

SKRIPSI

Diajukan untuk memenuhi salah satu syarat memperoleh gelar sarjana pada
Program Studi Pendidikan Sistem dan Teknologi Informasi

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ABSTRAK

Tingginya penetrasi internet di kalangan Generasi Z di Indonesia belum diiringi kesadaran dan keterampilan keamanan siber yang memadai, sehingga menjadikan kelompok ini rentan terhadap serangan siber, terutama *ransomware*. Sepanjang 2024, tercatat 514.508 aktivitas *ransomware* di Indonesia, yang menegaskan urgensi edukasi keamanan siber. Namun, sebagian besar upaya yang ada masih bersifat teoritis dan kurang mengadopsi strategi pembelajaran praktis, sehingga diperlukan solusi yang tidak hanya aplikatif, tetapi juga selaras dengan target pengguna. Penelitian ini menguji instrumen kuis adaptif yang diintegrasikan dalam *Visual Novel Interactive Game* Your Zero Hour berbasis *adaptive learning* sebagai media pembelajaran keamanan siber *ransomware*, yang kemudian dikembangkan dan diuji kelayakannya. Instrumen disusun berdasarkan Peraturan BSSN Nomor 11 Tahun 2020, Kerangka Kerja Indeks Literasi Digital 2021, dan penelitian terdahulu. Validasi dilakukan melalui uji validitas, reliabilitas, tingkat kesukaran, dan daya pembeda dari hasil dua tes dengan 77 responden. Hasil menunjukkan mayoritas butir soal valid, sisanya direvisi, dengan reliabilitas tinggi (α = 0,87 dan α = 0,90), distribusi tingkat kesukaran seimbang, serta dominasi daya pembeda kategori sangat baik. Your Zero Hour dirancang dengan dua *route* cerita, *Defender* dan *Attacker*, masing-masing terdiri atas tiga tingkat kesulitan, yang memadukan *scaffolding*, *experiential learning*, *flow theory*, dan gamifikasi untuk menjaga keterlibatan pemain. *Alpha testing* telah memastikan seluruh fitur berjalan optimal, dan *beta testing* menghasilkan *test case passed* 100% dengan respons positif dari tiga *tester*. Penelitian ini menghasilkan instrumen kuis adaptif teruji yang telah melalui analisis kuantitatif terstandarisasi, sekaligus media pembelajaran interaktif yang berpotensi menjadi solusi inovatif untuk edukasi keamanan siber *ransomware* bagi Generasi Z.

Kata kunci: Keamanan Siber, *Ransomware*, *Game* Visual Novel Interaktif, Pembelajaran Adaptif

"YOUR ZERO HOUR": AN INTERACTIVE VISUAL NOVEL GAME BASED ON ADAPTIVE LEARNING AS A CYBERSECURITY LEARNING MEDIUM ON RANSOMWARE

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ABSTRACT

The rapid increase of internet penetration among Generation Z in Indonesia has not been matched by adequate cybersecurity awareness and skills, making this group vulnerable to cyberattacks, particularly ransomware. In 2024, 514,508 ransomware incidents were recorded in Indonesia, highlighting the urgent need for cybersecurity education. Yet, most existing initiatives remain theoretical and lack practical learning strategies, creating a demand for solutions that are both applicable and aligned with the target users. This study evaluates an adaptive quiz instrument integrated into the Visual Novel Interactive Game Your Zero Hour, which applies an adaptive learning approach as a medium for ransomware cybersecurity education. The instrument was developed based on BSSN Regulation No. 11/2020, the 2021 Digital Literacy Index Framework, and prior studies, and was validated through tests of validity, reliability, difficulty level, and discrimination index with 77 respondents. Findings show that most items were valid, with revisions for the rest, and demonstrated high reliability ($\alpha = 0.87$ and $\alpha = 0.90$). Items were distributed across balanced difficulty levels and dominated by excellent discrimination indices. Your Zero Hour features two story routes, Defender and Attacker, each with three difficulty levels, incorporating scaffolding, experiential learning, flow theory, and gamification to maintain engagement. Alpha testing confirmed system functionality, while beta testing achieved 100% success rate with positive feedback from all three testers. This research provides a validated adaptive quiz instrument supported by standardized quantitative analysis, along with an interactive medium offering strong potential as an innovative solution for ransomware cybersecurity education among Generation Z.

***Keywords**: Cybersecurity, Ransomware, Visual Novel Interactive Game, Adaptive Learning*

DAFTAR ISI

DAFTAR TABEL

DAFTAR GAMBAR

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