

ABSTRAK

**RANCANG BANGUN *GAME WORD ORDER* MENGGUNAKAN
ALGORITMA FISHER-YATES SHUFFLE DAN KNUTH-MORRIS-PRATT
BERBASIS WEB**

(Indri Dwi Lestari, 2026: 102 Halaman)

Penguasaan bahasa Inggris masih menjadi tantangan bagi masyarakat Indonesia, terutama dalam menyusun kosakata menjadi kalimat yang tepat akibat perbedaan struktur bahasa Indonesia dan bahasa Inggris. Kondisi tersebut ditemukan pada *English Community* Prabumulih sebagai komunitas belajar bahasa Inggris nonformal. Penelitian ini bertujuan merancang dan membangun game *Word Order* berbasis website sebagai media pendukung pembelajaran bahasa Inggris dengan menerapkan algoritma Fisher-Yates Shuffle untuk mengacak urutan soal dan posisi kata serta algoritma Knuth-Morris-Pratt untuk memvalidasi jawaban pemain. Pengembangan sistem menggunakan metode *Game Development Life Cycle* (GDLC) yang meliputi tahap *initiation*, *pre-production*, *production*, *testing*, dan *release*. Pengujian dilakukan menggunakan *Black Box Testing*, analisis algoritma, serta pretest dan posttest sebagai data pendukung. Hasil Black Box Testing menunjukkan seluruh fungsi sistem berjalan sesuai kebutuhan. Analisis Fisher-Yates Shuffle menggunakan metode Chi-Square menunjukkan distribusi hasil pengacakan mendekati uniform sehingga peluang kemunculan setiap elemen relatif sama. Pengujian algoritma Knuth-Morris-Pratt terhadap 70 data uji menghasilkan akurasi validasi sebesar 100%. Analisis N-Gain terhadap 30 responden memperoleh rata-rata 0,38 dengan kategori sedang, yang menunjukkan adanya peningkatan nilai *pre-test* dan *post-test* sebagai data pendukung penelitian. Dengan demikian, *game Word Order* berbasis website berhasil dikembangkan dan dapat digunakan sebagai media pendukung pembelajaran bahasa Inggris.

Kata Kunci : *Game Word Order*, Fisher-Yates Shuffle, Knuth-Morris-Pratt, GDLC, Pembelajaran Bahasa Inggris

ABSTRACT

DESIGN AND DEVELOPMENT OF A WEB-BASED WORD-ORDER GAME USING THE FISHER-YATES SHUFFLE AND KNUTH-MORRIS-PRATT ALGORITHMS

(Indri Dwi Lestari, 2026: 102 Pages)

English proficiency remains a challenge for many Indonesians, particularly in arranging vocabulary into grammatically correct sentences due to differences between Indonesian and English sentence structures. This condition was identified in English Community Prabumulih, a non-formal English learning community. This study aims to design and develop a web-based Word Order game as a supporting medium for English language learning by implementing the Fisher-Yates Shuffle algorithm to randomize question sequences and word positions and the Knuth-Morris-Pratt algorithm to validate players' answers. The system was developed using the Game Development Life Cycle (GDLC) method, which consists of the initiation, pre-production, production, testing, and release stages. System evaluation was conducted using Black Box Testing, algorithm analysis, and pretest-posttest as supporting data. The Black Box Testing results showed that all system functions operated according to the specified requirements. The Chi-Square analysis indicated that the Fisher-Yates Shuffle algorithm produced a randomization distribution close to a uniform distribution, providing relatively equal opportunities for each element to occupy any position. Testing of the Knuth-Morris-Pratt algorithm on 70 test cases achieved a validation accuracy of 100%. In addition, the N-Gain analysis involving 30 respondents produced an average score of 0.38, which falls into the medium category, indicating an improvement between the pretest and posttest scores as supporting data for this study. Therefore, the developed web-based Word Order game can be utilized as a supporting medium for English language learning.

Keywords : *Word Order Game, Fisher-Yates Shuffle, Knuth-Morris-Pratt, GDLC, English Language Learning*