ABSTRACT

The development of mobile technology provides significant opportunities for creating interactive learning media for kindergarten-aged children. However, there are still limited educational applications that present learning materials in a structured, engaging, and developmentally appropriate manner for early childhood learners. This study aims to develop an Android-based learning application by implementing the Finite State Machine (FSM) algorithm to regulate the learning flow so that the learning process becomes systematic and easy to understand. The Ayo Belajar application is designed to help children recognize letters, numbers, shapes, colors, money, Pancasila, and places of worship through interactive learning activities and quizzes. The development method used in this study is the Multimedia Development Life Cycle (MDLC), which consists of the concept, design, material collecting, assembly, testing, and distribution stages. Application testing was conducted through functional testing using Boundary Value Analysis (BVA) and usability testing using the System Usability Scale (SUS), involving 46 respondents. The test results show that all application features function properly, the learning flow controlled by FSM operates as designed, and the usability evaluation achieved a SUS score of 74.13, which falls into the good and acceptable categories. Based on these results, it can be concluded that the Ayo Belajar application is suitable for use as a supporting learning medium for kindergarten-aged children.

Keywords: Boundary Value Analysis, Finite State Machine, Learning Media, System Usability Scale

ABSTRAK

Perkembangan teknologi perangkat bergerak memberikan peluang besar dalam pengembangan media pembelajaran interaktif bagi anak usia taman kanak-kanak. Namun, masih terbatas aplikasi pembelajaran yang mampu menyajikan materi secara terstruktur, menarik, dan sesuai dengan karakteristik belajar anak usia dini. Penelitian ini bertujuan untuk mengembangkan media pembelajaran berbasis Android dengan menerapkan algoritma *Finite State Machine* (FSM) sebagai pengatur alur pembelajaran agar proses belajar berjalan secara sistematis dan mudah dipahami. Aplikasi Ayo Belajar dirancang untuk membantu anak mengenal huruf, angka, bentuk, warna, uang, Pancasila, dan tempat ibadah melalui aktivitas belajar dan kuis yang interaktif. Metode pengembangan yang digunakan adalah *Multimedia Development Life Cycle* (MDLC) yang meliputi tahap *concept, design, material collecting, assembly, testing,* dan *distribution*. Pengujian aplikasi dilakukan melalui pengujian fungsional menggunakan *Boundary Value Analysis* (BVA) serta pengujian usability menggunakan *System Usability Scale* (SUS) yang melibatkan 46 responden. Hasil pengujian menunjukkan bahwa seluruh fitur aplikasi berjalan sesuai fungsinya, alur pembelajaran yang dikendalikan FSM berjalan dengan baik, dan nilai usability memperoleh skor SUS sebesar 74,13 yang termasuk dalam kategori *good* dan *acceptable*. Berdasarkan hasil tersebut, dapat disimpulkan bahwa aplikasi Ayo Belajar layak digunakan sebagai media pembelajaran pendukung bagi anak usia taman kanak-kanak.

Kata Kunci: *Boundary Value Analysis, Finite State Machine*, Media Pembelajaran, *System Usability Scale*