ABSTRACT

Rapidly developing technology affects all aspects of life, including education, by expanding access to educational resources and improving the optimization of the education system through learning media. However, the communication systems course in the Telecommunication Engineering Undergraduate Study Program, Faculty of Electrical Engineering, Telkom University, still suffers from a lack of learning media for digital communication systems. The results of a survey of 142 students and lecturers showed difficulties in applying the concepts learned in real situations, which significantly affects education and technology implementation. This emphasizes the need for more effective learning media to help students understand and apply the material practically.

To meet the learning needs in communication systems courses, a solution is needed in the form of learning media that is effective and in accordance with student needs. One solution is to design learning media with simulators that visualize various waveforms in the context of digital communication systems. Product specifications must integrate interactive and in-depth learning experiences, as well as ensure the relevance and credibility of the material. Therefore, a learning media in the form of a website called CommPlexity was created, which has six main specifications: subject matter, affective consideration, interface, navigation, media performance, and data security.

CommPlexity is a platform that has two main features, namely Course and Simulator. The Course feature includes learning materials, video explanations, and practice questions (quiz), while the Simulator feature provides simulations of sub-systems and system performance. This platform is specifically designed to be easily understood by Telecommunication Engineering undergraduate students. CommPlexity's two main features focus on Digital Communication System learning materials, such as Source Coding and Decoding, Channel Coding and Decoding, Digital Modulation and Demodulation, Multiple Access, and channels (AWGN and Rayleigh). CommPlexity has a success rate of 90.585%, which has exceeded the initial target of 78%.

Key Words :   Website, Simulator, Course, Digital Communication System