

# Electronic Textbooks as Means for Developing Professional Competencies of Engineering Students

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## Abstract

The article is devoted to the problem of electronic textbooks (e-textbooks) introduction into the practice of engineering education. This study focused on applying electronic textbooks to improve students' professional competence development during their acquisition of Electrical Engineering disciplines. The approach of purposeful development of students' knowledge and skills in the electrical engineering field was used. The *Electrical Engineering* electronic textbook was developed using the open Internet universal system of information management (CMS) Joomla 3.5. The e-textbook included 20 topics supported by theoretical information, illustrations, and electrical processes simulations with the opportunity to manage the simulations. The electronic textbook was equipped with the tests to provide systematic, incremental and purposeful acquisition of the learning content. The test also enabled to assess of students' learning outcomes of the *Electrical Engineering* course. The electronic textbook was tested under the conditions of five Ukrainian vocational schools. The experiment results provided evidence of the electronic textbook efficiency in developing the professional competence of engineering students with a probability of 95%. The conclusion about the positive impact of the electronic textbook application on the students' learning outcomes, development of their needs, motives, and goals was not accidental. Some directions of further research have been outlined.

## Keywords

E-textbook Professional competence Engineering education Electrical Engineering Visual information Pedagogical experiment

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