



MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC
SOLUTIONS

USING LOW-CODE ONLINE PLATFORMS TO TEACH
STUDENTS HOW TO DESIGN WEB APPLICATIONS

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Abstract. This article highlights the challenges of teaching students to design web applications and analyzes researchers' work on the capabilities of online platforms. It also presents the features of low-code online platforms for designing web applications, such as OutSystems, Mendix, Appgyver (SAP Build Apps), Zoho Creator, and Bubble, and provides suggestions and recommendations for using low-code online platforms to teach students web application design.

Keywords: web app, mobile app, code, online platforms, OutSystems, Mendix, Appgyver (SAP Build Apps), Zoho Creator, Bubble.

At the current stage of society's development, there are new and sharp demands for developing specialists' competencies in the field of information technologies, particularly in design. At the same time, the goals and tasks of education, along with the technologies used in the learning process, are changing, creating the need to use global networks [1]. Therefore, in training future information technology specialists, using internet technologies, including online platforms, is becoming a crucial factor in developing their competencies in web application design.

Therefore, it is necessary to develop a research-based approach to using online platforms for training IT specialists in higher education institutions, including teaching web application design. To do this, it first requires studying the research of scientists in the field.

Scientific research on problems in designing web applications has been carried out by scholars and researchers such as Minaya Vera Cristhian Gustava, Mendoza Velez Oswaldo Vicente, Arias Vera Irena Loreley, Minaya Vera Andres Alexander, Bravo Vera Henry Fabricio [2], Sebastian Brühl, Reinhard Bernsteiner, Christian Ploder, Thomas Dilger [3], Jucie Xavier Silva, Guilherme Avelino [4], Vaishali Phalake, Shashank Joshi, Kuldip Rade, Vijay Phalke, [5], Deepak Kumar Wilmington [7], Deepak Kumar Wilmington [8], C. Yuvarajan, S. Nithya Priya, A. Bhoomadevi [9]. According to them, when teaching students how to design web applications, it is important to first use no-code platforms and then low-code online platforms after having some programming knowledge and skills. Based on the analysis of these researchers' work, the article discusses the capabilities of low-code online platforms.

Low-code platforms require some technical knowledge and are often used for business processes, CRM, and ERP systems.





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Specifically, OutSystems is a corporate-level low-code online application development platform that provides a visual environment for quickly creating, testing, and deploying web and mobile apps. It is often mentioned alongside no-code platforms and is especially designed for complex business systems. Development, quality control, deployment, and monitoring in OutSystems are highlighted as being done in a single integrated environment. The low-code approach significantly reduces development time thanks to code abstraction, the use of ready-made components, and automated generators. With its drag-and-drop interface and visual design, you can work with less technical knowledge compared to traditional coding.

Mendix is an enterprise-level low-code online platform that lets you create web and mobile apps in a visual environment with minimal coding. Research shows it's one of the leading low-code platforms alongside OutSystems, Power Apps, and Appian. It's a fast, visual, cloud-friendly low-code platform that's really convenient for corporate apps and citizen developers. Drag and drop, automatic code generation, and ready-made components make rapid application development (RAD) possible [5], [6].

Appgyver (SAP Build Apps) – SAP AppGyver is now known as SAP Build Apps and is a fully no-code/low-code online platform that works within SAP BTP (Business Technology Platform). It's designed to create web and mobile business applications without writing code, using drag and drop.

Zoho Creator is a cloud-based low-code online platform designed to quickly build, customize, and launch web and mobile apps that automate business processes. It's used in many fields – healthcare, tourism, education, and CRM systems.

Bubble is both a no-code and low-code web app builder platform that lets users create full web applications through a visual interface right in the browser. Research shows it's a great tool in the low-code/no-code (LCNC) space for rapid prototyping, testing business ideas, and empowering non-developer users. General no-code/low-code platforms like Bubble can be integrated with LLMs to add features like text generation, summarization, and chatbots to apps. "Citizen developers" who don't know how to code can create functional web apps and quickly launch prototypes.

In conclusion, it can be said that each low-code online platform has its own unique features and conveniences, and depending on the purpose of use and the type of web application, students learning programming and teachers can design a web application with minimal technical knowledge.

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MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC
SOLUTIONS

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