

Role-based design model for educational multimedia complex

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Abstract

The article emphasizes the importance of the interaction of teachers and IT-specialists in order to create a joint educational multimedia complex for teaching students of the 5th grade the basics school of algorithmization and programming. The approbation of a role-based design model of the multimedia complex, which focused on practical consolidation of acquired knowledge.

Keywords: educational multimedia complex, role-based design model

1 Introduction

The creation of an educational multimedia complex requires the work of qualified specialists and relevant investments. The preparation of this type of issue requires not only the knowledge and skills of school teachers of computer science but also IT specialists (graphic designers, programmers, etc.) and project managers. Work on an educational product requires a single conceptual framework since some terms are interpreted differently by teachers and IT professionals. In addition, not all teachers of computer science possess all the necessary innovative knowledge and the concept of trends in modern information technologies. Therefore, IT-specialists do not possess the knowledge of developmental psychology, pedagogy, and methods of teaching children.

2 Decision

The scientific works of Bent B. Andersen, Katya Van Den Brink [1], and V.V. Zhumaev [2] are important for studying this particular scientific problem. They include the concepts of multimedia textbooks, design aspects, and building collaboration with different specialists are considered.

After analyzing their performance, and based on our own experience, it has created its own role model design educational multimedia complex. Consider the design stages and those involved in them from specialists:

1. *The pedagogical scenario for the use of the educational multimedia complex.* This stage includes the search, selection and analysis of the necessary information, and the development of a lesson plan. Responsible for the results at this stage are educators and methodologists.
2. *Formation of technical specifications* – it is created based on the needs of the parties. It includes: goals, objectives, and functionality of the product being developed, type of issue, planned results, general structure, selection of technical equipment for which the complex is created (tablet, PC or interactive whiteboard), intermediate and final dates for submitting of the development materials. Responsible – educators and IT professionals with managers.
3. *Psychological and pedagogical basics for creating a multimedia educational complex.* It implies a description of teaching methods, forms, and means of learning, consideration of the problem of perceiving and presenting information, the role of the user interface, ergonomics of on-screen forms of presenting information, ease of use of graphical interface elements; selection of the main characters for the educational complex; the target audience analysis (conducting a survey of students of the 5th grade the basics school). Responsible – educators and IT professionals.
4. *Design.* This stage includes the selection of software (information technology), the creation and analysis of the main characters for the educational multimedia complex, UX/UI design, masthead. Responsible – IT-specialists.
5. *Product Evaluation and Testing.* Testing (alpha and beta) of the educational multimedia complex on different devices with different system requirements (performance assessment, interactivity, multimedia components, ergonomics indicators); evaluation of the issue for compliance with pedagogical requirements, the official school curriculum, and gender standards. Testing the publication in one of the schools. Responsible – IT professionals, educators, and methodologists.
6. *Methodological and legal aspects of the use.* This stage involves: a) the creation of teaching materials, instructions for using the established product; b) copy protection, as well as copyright registration in accordance with the laws of the country in which the product is created or using a Creative Commons license; c) differentiation of access rights, editing, and work of the student, teacher, system administrator. Responsible - managers, educators and IT professionals.

3 Research results

In October of the year 2019, the creative team of the educational multimedia issue was created - a student-developer (the author of this thesis), a teacher-consultant (mentor) from Simon Kuznets Kharkiv National University of economics and a teacher of informatics (Municipal establishment Kkharkiv Humanitarian-pedagogical Academy" of the Kharkiv regional council). Based on the developed role-based design model, a prototype of the training multimedia complex was created (Figure 1, Figure 2). Also, this prototype was officially tested in Kharkiv Lyceum 89.



FIGURE 1 Screen copy of the pages of the created educational multimedia complex

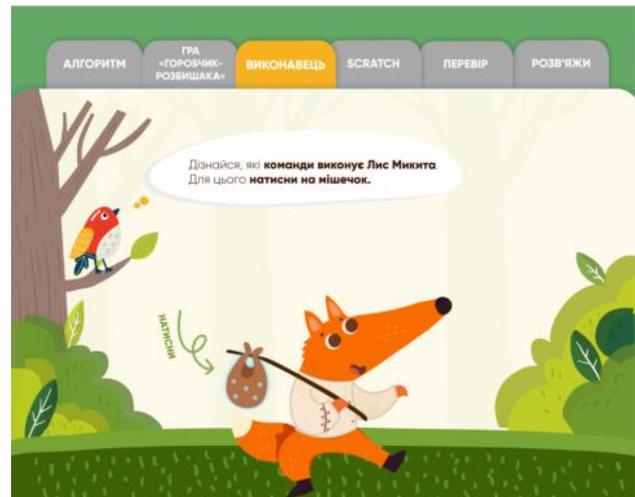


FIGURE 2 Screen copy of the pages of the created educational multimedia complex

4 Conclusion

The proposed role-based design of educational multimedia complex simplifies the process of communication between teachers and specialists from various IT fields, which will allow creating better publications.

References

- [1] Andresen B B, Van Den Brin, Katj 2013 *Multimedia in Education Curriculum* Press: UNESCO Institute for Information technologies in Education
- [2] Zhumaev V V 2014 Determining the requirements for pedagogical

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