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RUSE

The Ruse Branch of the Union of Scientists in Bulgaria was founded in 1956. Its first Chairman was Prof. Stoyan Petrov. He was followed by Prof. Trifon Georgiev, Prof. Kolyo Vasilev, Prof. Georgi Popov, Prof. Mityo Kanev, Assoc. Prof. Boris Borisov, Prof. Emil Marinov, Prof. Hristo Beloev. The individual members number nearly 300 recognized scientists from Ruse, organized in 13 scientific sections. There are several collective members too – organizations and companies from Ruse, known for their success in the field of science and higher education, or their applied research activities. The activities of the Union of Scientists – Ruse are numerous: scientific, educational and other humanitarian events directly related to hot issues in the development of Ruse region, including its infrastructure, environment, history and future development; commitment to the development of the scientific organizations in Ruse, the professional development and growth of the scientists and the protection of their individual rights.

The Union of Scientists – Ruse (US – Ruse) organizes publishing of scientific and popular informative literature, and since 1998 – the "Proceedings of the Union of Scientists- Ruse".

BOOK 5

"MATHEMATICS, INFORMATICS AND PHYSICS"

VOLUME 9

CONTENTS

(X)HTML E-HANDBOOK IN THE DISCIPLINE "MULTIMEDIA SYSTEMS AND TECHNOLOGIES" FOR TEACHING AND LEARNING PURPOSES

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***Abstract**: This paper presents a (X)HTML e-handbook for teaching and learning purposes. It can be used as a pedagogical guide or educational resource in the discipline „Multimedia system and technologies" and it is completely written to be in compliance with the standards and modern web design practices. The purpose of the handbook is to make teaching easier and more enjoyable and to facilitate student learning and performance, and to enhance the quality of education. The methodology in the course is based on the constructivist principles for teaching and learning.*

***Keywords**: e-handbook, e-learning, HTML, constructivism, quality of education, teaching, learning*

INTRODUCTION

Dramatic changes in information and communication technologies provide a powerful strength for the growth of e-learning. E-learning has become a certain trend for education. Anytime and all-the-time access to electronic resources have changed learning practices. Learning today is measured not by what we know but how successfully we find the information we need in the moment we need it.

1. Theory underlying the methodology

Computer science education has a need for delivery methods that place a strong focus on the relationship between university and carrier. Students' learning is often detached from real world problems, because knowledge is often taught as context-independent. It is very difficult for students to transfer what they have learned to solving real world problems.

Brown, in review [3] of the application of constructivist principles in education suggests that students in career and technical education programs prefer hands-on, engaged learning experiences [1, 5, 9] and want to know that the skills they are being asked to learn will directly benefit them in the job market [6]. Moreover, the students expect to leave the university with ready-to-use job skills.

Constructivist learning theory is based on the assumption that knowledge is constructed by learners as they attempt to make sense of their experiences. Learners actively construct knowledge based on prior experiences and they are not empty vessels waiting to be filled. In constructivism, constructive processes operate and learners form, elaborate, and test candidate mental structures until a satisfactory one emerges [7].

In constructivism, meaning is created by ourselves rather than existing in the world independently of us. There are many ways to structure the world and there are many meanings or perspectives for any event or concept. Meaning, in the constructivist view, is indexed by experience [3].

Constructivist learning principles

The following basic principles are used in the methodology for effective learning [10]:

- Students' prior knowledge can help or hinder learning;
- How students organize knowledge influences, how they learn and apply what they know;
- Students' motivation determines, directs and sustains what they do to learn;
- To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned;

- Goal-directed practice coupled with targeted feedback enhances the quality of students' learning;
- Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning;
- To become self-directed learners, students must learn to monitor and adjust their approaches to learning.

Constructivist teaching principles

The following basic principles are used in the methodology for effective and more efficient teaching. The aim is to support and facilitate student learning [10]:

- Effective teaching involves acquiring relevant knowledge about students and using that knowledge to inform the course design and teaching;
- Effective teaching involves aligning the three major components of instruction: learning objectives, assessments, and instructional activities;

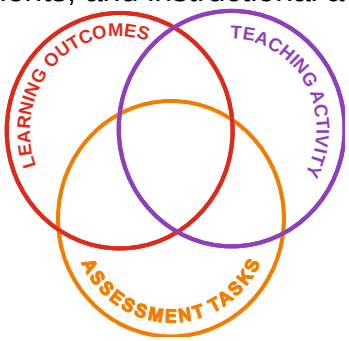

Figure 1. Aligning learning outcomes, teaching activity and assessment tasks [2].

- Effective teaching involves articulating explicit expectations regarding learning objectives and policies;
- Effective teaching involves prioritizing the knowledge and skills chosen to focus on.
- Effective teaching involves recognizing and overcoming expert blind spots.
- Effective teaching involves adopting appropriate teaching roles to support the learning goals.
- Effective teaching involves progressively refining the courses based on reflection and feedback.

2. E-handbook description

HTML (HyperText Markup Language) is the language used to create web page documents. The updated version, XHTML (eXtensible HTML) is essentially the same language with stricter syntax rules. XHTML (Extensible Hypertext Markup Language) is HTML that is written in XML syntax.

The World Wide Web Consortium (W3C) releases specifications, called recommendations, on HTML and other languages used on the Internet. The specifications developed by the W3C help to ensure that Web designers create pages that can be displayed by any browser or browsing device that also follows these specifications. The (X)HTML e-handbook is completely written to be in compliance with the standards and modern web design practices.

The (X)HTML e-handbook is designed for the teaching and learning purposes. It can be used as a pedagogical guide or educational resource in the discipline „Multimedia system and technologies". The purpose of the handbook is to make teaching easier and more enjoyable and to facilitate student learning and performance, and to enhance the

quality of education. The methodology in the course is based on the constructivist principles for teaching and learning.

The (X)HTML e-handbook (Figure 3) is part of the “Multimedia systems and technologies” web site (Figure 2).

Figure 2. Multimedia system and technologies’ web site

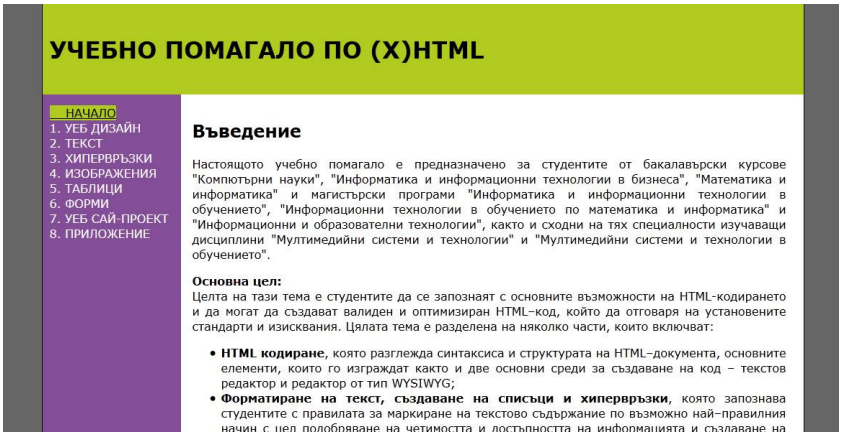

Figure 3. (X)HTML e-handbook – index.html - page

What does the handbook cover?

This handbook will teach the students of the basics of writing standards-based, accessible web pages that they can style with CSS. The emphasis here is on learning to use XHTML according to standard specifications. It provides a modern, integrated approach to web design. Each of the chapters looks at a specific aspect of creating a web page, such as type, working with images, creating navigation, creating layout blocks, etc.

In each case, relevant technologies are explored in context and at the appropriate time. Many practical examples are provided, which students can use for further understanding of each subject. All chapters in the handbook have the following characteristics:

- Articulate a clear set of learning objectives, knowledge and skills that the teacher expect students to demonstrate by the end of a course;
- The instructional activities support these learning objectives by providing goal-oriented practice;
- The assessments (e.g., tests, papers, problem sets, performances) provide opportunities for students to demonstrate and practice the knowledge and skills articulated in the objectives, and for instructors to offer feedback that facilitate further learning.

The aim of the handbook is to help students to: understand how the web works and how to communicate through the web; create effective web sites; develop basic skills needed to become a web designer; develop skills that will allow them to succeed in any subject area and throughout their life.

How the handbook is structured?

This handbook is divided into eight parts. The following explains each of these parts in detail, and what each chapter covers.

Chapter I. "Web design" provides a general overview of the web design environment:

- Explanation of the Web, as it relates to the Internet;
- The role of the server and the browser;
- Introduction to URLs and their components;
- The anatomy of a web page;
- An introduction to (X)HTML elements and attributes;
- The elements that provide document structure.

Chapter II. "Text" introduces the elements to choose for marking up text content:

- Choosing the best element for the content;
- Using block elements to identify the major components of the document;
- Adding line breaks;
- Comparing inline elements;
- Creating custom elements with the versatile generic elements, `div` and `span`;
- Adding special characters to the document.

Chapter III. "Hyperlinks" provides information about the markup that makes links work:

- Making links to external pages;
- Making relative links to documents on your own server;
- Linking to a specific point in a page;
- Adding "mailto" links;
- Targeting new windows.

Chapter IV. "Images" focuses on adding image content to the document using the inline `img` element:

- Adding images to a web page;
- Using the `src`, `alt`, `width`, and `height` attributes.

Chapter V. "Tables" is reviewing the markup that structures the content into tables:

- How tables are used;

- Basic table structure;
- The importance of headers;
- Spanning rows and columns;
- Cell padding and spacing;
- Captions and Summaries.

Chapter VI. "Forms" introduces web forms, how they work, and the markup used to create them:

- How forms work;
- The `form` element;
- POST versus GET;
- Variables and values;
- Form controls, including text entry fields, buttons, menus, and hidden data;
- Form accessibility features.

Chapter VII. "Web design development process" identifies the stages of the web site development life cycle:

- Analysis and Planning;
- Design and Development;
- Testing;
- Implementation;
- Evaluation and Maintenance;

Chapter VIII. "Appendix" covers the requirements for standards compliant web documents:

- The three versions of HTML: Strict, Transitional, and Frameset;
- Introduction to XHTML and its stricter syntax requirements;
- Using Document Type (DOCTYPE) Declarations;
- Standards vs. Quirks mode in browsers;
- Validating the markup;
- Indicating a document's character encoding.

CONCLUSION

We live in a world of constantly emerging new technologies that challenge the field of education while at the same time present exciting opportunities. There is no doubt about the benefits of using e-learning resources in learning and teaching and embedding the use of Information Communication Technology into the curriculum. Learning resources and technologies improve access, enhance the quality of students' learning and performance and provide effective teaching practices.

REFERENCES

[1] Ausburn, L. J., & Brown, D. Learning strategy patterns and instructional preferences of career and technical education students. Journal of Industrial Teacher Education, 43(4), 2006, 6-39.

[2] Biggs, J. B, Catherine Tang. Teaching for quality at university, Society for Research into Higher Education&Open University Press/Mc Graw-Hill Education, 2007, 335c.

[3] Brown, J. S., Collins, A., & Duguid, P. Situated cognition and the culture of learning. Educational Researcher, 18, 1989, 32-42.

[4] Davis G. HTML, XHTML & CSS – QuickSteps, McGraw-Hill Companies, 2010, pp.225.
[5] Gentry, M., Peters, S., & Mann, R. Differences between general and talented students' perceptions of their career and technical education experiences compared to their traditional high school experiences. Journal of Advanced Academics, 18(3), 2007, 372-401.
[6] Gentry, M., Rizza, M., Peters, S., & Hu, S. Professionalism, sense of community, and reason to learn: Lessons from an exemplary career and technical education center. Career and Technical Education Research, 30(1), 2005, 47-85.
[7] Perkins, D. Technology meets constructivism: Do they make a marriage? Educational Technology, 35(5), 1991, 18-33.
[8] Robbins J. Learning Web Design. A Beginner's Guide to (X)HTML, Style Sheets, and Web Graphics, Third Edition, O'Reilly Media, Inc., 2007, pp. 481.
[9] Stitt-Gohdes, W. Business education students' preferred learning styles. Journal of Career and Technical Education, 18(1), 2001, 32-45.
[10] http://www.cmu.edu/teaching/principles/index.html

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ЕЛЕКТРОННО УЧЕБНО ПОМАГАЛО ПО (X)HTML ЗА ЦЕЛИТЕ НА ОБУЧЕНИЕТО ПО ДИСЦИПЛИНАТА „МУЛТИМЕДИЙНИ СИСТЕМИ И ТЕХНОЛОГИИ“

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***Резюме**: Статията описва електронно учебно помагало по (X)HTML, което е предназначено за използване като допълнително средство при преподаване и учене по дисциплината „Мултимедийни системи и технологии“. То е разработено в съответствие със съвременните стандарти и практики в уеб дизайна. Целта на помагалото е улесняване процеса на преподаване, подпомагане на студентите в процеса на учене и повишаване качеството на обучението. Учебното съдържание и методиката са построени на базата на принципите на конструктивизма за преподаване и учене.*

***Ключови думи**: електронно учебно помагало, електронно обучение, HTML, конструктивизъм, качество на обучението, преподаване, учене*

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