

FROM PAPER TO PIXELS: TRANSFORMING CURRICULUM INTO DIGITAL FORM

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ABSTRACT

The article deals with the process of transforming textbook content in the subject of history for the 9th grade into a website. We describe the process of adapting historical facts and information into an interactive and visually appealing form, the form of a website. We also draw attention to the possibilities and limits of the process of transforming textbook content into an interactive digital form, in order to highlight and emphasize the importance of digitizing the teaching content of the subject of history, not only for the needs of the 21st century, but also for the needs of current students. The article also aims to inspire and encourage practicing teachers to innovative approaches in teaching history in practice and to make historical facts accessible to students in an innovative form.

KEYWORDS

Education for the 21st century, digital learning materials, digitization, modern history teaching, history, websites

1. INTRODUCTION

The content of education is elaborated in detail in all books used in the teaching process at individual types of schools, which do not explicitly have the character of a textbook. These become the norm for the student with their content. Due to the interaction of several factors, in school books we rarely, if ever, encounter a deeper treatment of the topic of Regional History within the subject of history. Regional education, part of history teaching, primarily focuses on active cognition, reflecting on the past and present, in the context of a certain place, region, state, with the subsequent projection of the acquired knowledge into its everyday life. However, this aspect is currently not given due emphasis in individual types of schools when teaching history. Many teachers do not realize that Regional Education as a cross-cutting theme can arouse students' interest in the subject of history. Another problem may be the impossibility of allocating space for the cross-cutting theme within the teaching process, in terms of time, or the lack of suitably didactically adapted material usable in the teaching process [1]. In the process of creating a suitable didactic aid, in this case the visual one, for the needs of the teaching process, it is necessary to primarily take into account the age characteristics of the target group and the tasks and focus of the teaching subject of history, for which the resulting visual aid will be intended [2]. As a final product, it should fulfill the function of information material, serving to deepen the basic text from school books. At the same time, it must be adapted to the current time and the nature of teaching, and also be able to attract or stimulate the attention and activity of the student in viewing history from different angles with its content focus [3]. The way in which, and whether, a teacher is able to incorporate the use of visual aids into the teaching process is largely a result of their creativity. The subsequent creativity of the student also depends on creativity and creative approaches to teaching [4]. It is positive if the teacher does not apply a

stereotype, does not work according to a scheme, but is able to adequately adapt his work to the real educational situation. His creativity will thus be reflected not only in how he, or possibly others, evaluate his work, but especially in what level of knowledge his students will achieve. Modernization of the teaching process is currently a necessity [5]. If modernization consists in the complexity of innovation of the content of education, methods, forms of educational work of the teacher and the school, the material and technical side of teaching, then the creation of a website can clearly be considered as its form [6].

2. TEACHER AS AN INNOVATOR

The teacher is undoubtedly the main figure in the process of shaping the personality of a student in the school environment. His approach to teaching, as well as to the students themselves, can significantly affect their interest in teaching. Perhaps this is why very high demands are constantly placed on the teacher not only in terms of the level of his education, the level of communication, but also his ability to interest and become a role model for students. Graduates of pedagogical disciplines largely lack practical experience, which cannot always be replaced by the level of their theoretical knowledge. Despite the fact that teachers as students in the discipline are obliged to complete a certain number of hours in practice in the Slovak Republic, whether in the role of an observer or a teacher, this number still appears to be insufficient and so they usually gain experience only in the real performance of their profession [7]. It goes without saying that the level of knowledge of people is constantly increasing over time, and therefore it is logical that not all acquired knowledge and information can be mechanically transformed into educational content. It is necessary to consistently select and adapt it to the times and needs of society [8]. A person develops both physically and intellectually throughout his life. He acquires, deepens and improves abilities and talents, acquired mainly by inheritance. The teacher has to help him in this whole process in the school environment, which he can only succeed with difficulty if he does not interest his pupil. He must perceive that he is placed in the role of an implementer, but also an innovator of the teaching process and does not only transfer knowledge to his pupils. Consciously or unconsciously, through his influence they also acquire habits, abilities and skills [9]. In the current implementation of the educational process, the teacher must condition the content, but not the final form, of the lessons on the curriculum and the syllabus. The curriculum is the main document relating to the school environment. It is issued by the Ministry of Education, Science, Research and Sports of the Slovak Republic, it contains a list of compulsory, compulsory optional and optional subjects taught in a given type of school facility. Despite the fact that the curriculum and syllabus are considered a kind of pedagogical norm of the educational process, the teacher is required to constantly update and modify them, taking into account educational standards, the acceptance of which allows for a more accurate and precise definition of the content of the curriculum of a particular subject [10]. Currently, the teacher has access to an excessive amount of resources that he can incorporate into teaching and which the teacher did not have at his disposal in previous stages of the existence and functioning of the school system. The extent to which he applies them in the process of implementing lessons largely depends on his creativity, skills and ability to use them [11]. One of the most important points of reference for a teacher in the process of preparing and implementing lessons are school books – textbooks. They contain a detailed, didactically adjusted educational content adapted to the needs of the student, which also becomes the norm for the student [12]. However, a qualified teacher should have a much more extensive knowledge base than is contained in school books, so that he can demonstrate his knowledge in the field and, in his own interpretation of the curriculum, convey knowledge to students beyond the scope of the texts in them [13]. However, most teachers, especially those starting out without sufficient practice, tend to focus on the text in the textbook that elaborates on the curriculum that the

student is supposed to master, strictly adhere to it, and do not enrich it with anything new or interesting. This approach to teaching leads to students losing interest not only in the explanation of the subject matter, but also in its content, or even in the subject itself [14]. However, the aim of teaching is the exact opposite. Through it, the student, under the supervision and guidance of the teacher, has the task of mastering a set of goals in the psychomotor, cognitive and attitudinal areas, primarily by exerting their own initiative and activity, which must be supported by the teacher, not suppressed [15]. The primary task of the teacher in the educational process is to guide this process by using various teaching methods, preferring methods capable of activating the creativity and mind of the student. In cooperation with the primary task of the student to actively grasp everything new, discover and learn the unknown, cooperation is created in which the student is, on the one hand, the object of the teacher's influence, and on the other hand, a subject expressing his own attitudes. To ensure the greatest possible effectiveness of teaching, it is necessary to look at the student in this light and give him ample space for his self-realization with a focus on meeting the goals of teaching [16].

2.1. The Importance of Visuality in Teaching History

The effort to improve the quality of the educational process implemented in schools is constantly becoming an incentive for the emergence of various discussions. Their goal is also to find a suitable way to introduce visuality into all school subjects, allowing students to create a concrete idea of the phenomena and objects of reality [17]. In teaching history, even today, the teacher constantly encounters the fact that his students have primarily formal knowledge. The greatest shortcoming of the current student is that he mostly lacks clear historical ideas, because he considers it more important that his efforts and home preparation are evaluated with a good grade. Such a perception of the subject leads him to learn to mechanically reproduce the subject matter at the required level, but not to try to understand the mutual connections and relationships or the basic laws of historical development [18]. A possible cause must also be sought in the incorrect, uninteresting, stereotypical management of any of the organizational forms of teaching. In the process of the course of a time unit oriented towards the implementation of educational goals and teaching content, while constantly applying various educational means and methods, while respecting didactic principles, an important interaction takes place between the teacher and the pupil. This interaction should be enriching for both parties, but it does not have to take place exclusively in the school environment. The term organizational form is not synonymous with a lesson. We understand it as forms of pupil education taking place in the school, but also in the extracurricular environment – i.e. a trip, excursion, or outing, the use of which undoubtedly increases the pupil's interest in the course and content of the educational process [19]. The choice and implementation of the organizational form rests with the teacher's decision. This requires his ability to reflect before, during and after the implementation itself on the educational reality, or on the level of the pupil's previous experiences and knowledge, which will need to be followed up and gradually deepened. To achieve the desired effect, it is also necessary for the teacher to motivate the pupil appropriately, for example by using appropriate material and didactic resources, so that he can develop the activity that is essential in the entire process of upbringing and education. It is also an advantage for the teacher to have information about the interests of his pupils. This information can help him to choose the most appropriate motivation [20]. However, the fact remains that the most frequently used organizational form of teaching is the basic type of lesson, the content of which is constantly becoming a target of criticism. During its course, the teacher, in cooperation with a permanent group of students, at a precisely defined time interval, in a dedicated classroom or in another location, while respecting didactic principles and using the most adequate means and methods to achieve the set educational goals, makes new

information and knowledge available [21]. However, in real practice, we increasingly encounter the phenomenon that students receive ready-made knowledge exclusively through the teacher's explanation, without having to actively participate in the learning process, as a result of which formalism is clearly manifested in students' knowledge, or in its complexity it arouses hostility towards history. In connection with the above, the issue of forming correct historical ideas in students can be considered the most acute problem [22]. Students enter the school environment as individuals with preliminary ideas about events in history, mostly acquired from computer games, films, series, magazines, with a lack of correctly formed clear historical ideas, causing, for example, incorrect recognition of specific characteristic features of a certain period, groups, classes, poor understanding of the way people lived in the past, or incorrect perception of specific individuals important to history. Demonstrative teaching as such, through an adequate form of its implementation, should be able to ensure the possibility of observing real phenomena, objects, and tools and to create clear ideas in the mind of the student [23].

3. THE PROCESS OF CREATING A WEBSITE AND ITS IMPLICATIONS FOR HISTORY TEACHING

In the 21st century, the century of technical progress and social networks, creating a high-quality, engaging website that dynamically responds to the stimuli and needs of society is probably as difficult as making it visible after its publication and later constantly updating it, or managing it functionally [24]. Perhaps that is why its creation was initially narrowly specified for experienced experts, who have the necessary modern hardware and software equipment. Today, not only browsing information shared on the Internet in various graphic forms, but also publishing it, can become a routine activity for each of us [25]. There is not one, but a large number of different publications devoted to this issue, offering various instructions, methods, and themes, with the help of which even a less experienced individual can create a website that will make content of various natures available to its visitors in a highly graphic format. However, the degree of their topicality remains questionable, if we take into account the daily increasing new knowledge in the field of science and technology, the constant creation of new programs by programmers, or the rapid development of the Internet [26]. There are very few communication and information tools with such an intense influence as the Internet can have on a person. Likewise, today's student, as well as an adult, interacts with it every day, whether in a school, work or home environment. He gets stimuli and information from it, communicates on social networks, and is able to become part of a certain community through it. In this way, it gradually becomes a common part of his being, connecting various areas of life, from entertainment to business [27]. At the same time, by introducing ICT elements into teaching, the educational impact on the pupil becomes much more effective - unknown knowledge is presented to the pupil in a form familiar to him through the tools chosen by the teacher, which allows him to learn them more easily. However, their choice must not be a matter of chance. The teacher should choose them mainly based on the goal he wants to achieve by including them in teaching [28]. Not all teachers have mastered working with various available programs, so they cannot include them in teaching. They often do not even know about ICT elements that they could include in the process of education and training, not to mention the fact that only a few of them are able to create their own ICT tool that would be equally functional and helpful. However, most schools have the necessary technical equipment to work with them [29]. Working with a website in a history lesson can not only enliven the course itself, innovate it, but above all convey knowledge to the student in a way that is close to him. If the site is designed in the right way, while using elements that stimulate the senses or its content develops the cognitive abilities of the student, or makes available factual content with a historical theme,

its inclusion is more than welcome. Even a person untrained in the field can manage to create a website, using various instructions, but if it is to be a site that will be used when working with students in the educational process, he must not only be proficient in manipulating a computer, but also master didactic principles and principles. Therefore, before starting its creation, it is important to think everything through thoroughly, prepare the materials, and plan [30]. The most important thing is the main content of the website, which should be created and finalized in a way that is consistent with the purpose and nature of the website. It is logical that the graphic design and quality of individual pages, which are influenced not only by the author's ideas, knowledge, skills, but also by the overall focus of the website, will be different. It is assumed that most pages will contain at least one text field after their publication, since each author presents his thoughts, ideas, and observations to the audience mainly through it. Therefore, in addition to flawless grammatical execution, the text should also be adequately styled, sized, and colored, especially to the background visuals, but also to the requirements of visitors. The way the website functions and the appearance of the format when resizing in the browser window are affected by pixels. Their correct configuration can bring the website content closer to users in high resolution even on a small screen, such as a mobile phone or tablet, which will allow working with the website not only on a computer set-up. If an Internet user opens a page that makes them feel uncertain, confused or lost, they will quickly leave it and look for another. Therefore, every website should offer the most transparent user interface possible and be easy to manipulate. In most cases, websites can be updated almost immediately without much effort. This is undoubtedly their essential and inherent part, much more important than the creation and publication of the page itself. The creator of the website should therefore not consider updating the page as an obligation, but a necessity, because his followers will constantly expect and demand regular data updates, in accordance with the nature of the page and the current needs of society [31].

4. CONCLUSION

It is very difficult for a teacher to do without ICT in their teaching practice today. Although the initial enthusiasm resulting from the perception of ICT as a patch for all the complications and ambiguities associated with the implementation of education is gradually fading, their importance in the process of upbringing and education can still be considered more than undeniable. When working with ICT in teaching, the teacher must be aware that the focus of the work should be on the student, who, after guidance, should be able to critically evaluate available resources and respect and identify with the rules of safe handling of information, hardware, and software [32]. Today, the student often has much greater skills in manipulating a computer than the teacher himself, which can be a great benefit, especially if the teacher is able to incorporate the student's outputs into the learning resources in the future, whether in the form of photo documentation from the excursion, various other visual documentation, video recording, graph, table, or project. The durability and possibility of repeated use of the created materials, continuous editing, easy sharing thanks to electronic distribution, economic efficiency, and space-saving storage can undoubtedly be considered a great positive [33]. As a practical example of the transformation of learning content, we present a website we created: <https://ucebnicadejepisu.webnode.sk>. Since its first publication, it has been edited and supplemented several times. It cannot be ruled out that it will be updated, supplemented with content, or edited in cooperation with other educators working on the subject in the future. Each part of it and the overall content focus is adapted to the level of cognitive processes of a 9th grade elementary school student in the subject of history. When creating a page dedicated to Milan Rastislav Štefánik, one of the most important figures in Slovak history, we carried out a complex transformation of the text from a history textbook for the 9th grade of elementary school (Dušan, Kováč et al.,

(2019) *Dejepis 9: Pátrame po minulosti*, Bratislava, Orbis Pictus Istropolitana, pp. 18-19) into the form of a modern and interactive web material. This process involved careful preservation of the original content of the text to respect its authenticity, while supplementing the content with broader historical contexts, unique facts and interesting details that allow for a deeper understanding of his life and legacy. One of the key advantages is that the site is optimized for modern technologies, allowing students to easily and intuitively manipulate it not only on computers, but also on mobile phones or tablets. This feature not only increases the accessibility of the content, but also supports active interaction with the educational material, which ultimately makes the teaching process more efficient. The site also includes extended information about Štefánik's diplomatic and scientific activities, his contribution to the Slovak nation and his fascinating personal history, which are missing from the textbook, so it can be considered a supplement to the textbook text. Interesting facts, such as his passion for astronomy, cultural activities or innovative approach to aviation, are added to the broader historical context through video, thus providing students with a new perspective on the versatility of his person in visual form. Finally, we can conclude that a website with educational content, if properly designed, can serve as inspiration not only for other educational activities, but also for teachers and students themselves. Websites offer unique opportunities in education - from multimedia content processing to interactive tools that can make teaching more attractive and effective. We believe that the presentation of a specific website created for the needs of education of 9th grade students in the subject of history, sufficiently emphasized how technologies can enrich the learning process and bring history closer to today's generations.

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REFERENCES

- [1] Viliam, Kratochvíl, (1998) Učebnice dejepisu ako polyfunkčný prostriedok dejepisnej výučby. In ACTA HISTORICA NEOSOLIENSIA. Ročenka Katedry histórie Fakulty humanitných vied. [on-line], 1998. Tomus 1, č. I, pp. 111-115. Dostupné na internete: <<https://www.ahn.umb.sk/wp-content/uploads/2020/06/AHN-tomus-01.pdf>> [cit. 23.3.2025]
- [2] Stanislav, Julínek et al., (2004) Základy oborové didaktiky dějepisu, Brno, Masarykova univerzita, pp. 83-85.
- [3] Anna, Bocková, (2008) Výučba dejepisu ako pedagogický problém. Pohľad na funkčnosť dejepisného vzdelávania a funkčnosť faktografie. In Verbum histórie I. [on-line], 2008. č. I, pp. 23-33. Dostupné na internete: <https://www.fedu.uniba.sk/fileadmin/PDF/Sucasti/Katedry/KH/Verbum_Historiae/Zbornik_Verbum_Historiae_I..PDF> [cit. 23.3.2025]
- [4] Viliam, Kratochvíl, (2004) Modely na rozvíjanie kompetencií žiakov. K transformácii vzťahu histórie a školského dejepisu, Bratislava, Stimul, pp. 31-45.
- [5] Stanislav, Julínek et al., (2004) Základy oborové didaktiky dějepisu, Brno, Masarykova univerzita, pp. 52-60.
- [6] Denisa, Labischová, (2006) Možná úskalí integrativního pojetí výuky dějepisu a základů společenských věd. In Společenskovědní předměty. Čtvrtletník pro pedagogy základních a středních škol. Praha 2006, roč. VI., č. 2, pp. 6-10.
- [7] Vratislav, Čapek, (1985) Didaktika dějepisu I., Praha, Státní pedagogické nakladatelství, pp. 18-23.
- [8] Erich, Petlák, (2016) Všeobecná didaktika, Bratislava, IRIS, pp 30-35.
- [9] Erich, Petlák, (2016) Všeobecná didaktika, Bratislava, IRIS, pp 41-45.
- [10] Vladimír, Bobot & Miroslava, Jakubeková & Róbert, Rurák, (2012) Využívanie informačno-komunikačných technológií vo vyučovaní, Bratislava, Metodicko-pedagogické centrum v Bratislave, pp. 27-29.
- [11] Július, Alberty (1992) Didaktika dejepisu, Banská Bystrica, Univerzita Mateja Bela, pp. 11-23.

- [12] Ivan, Turek, (2014) Didaktika, Bratislava, Wolters Kluwer, pp. 318-325.
- [13] Erich, Petlák, (2016) Všeobecná didaktika, Bratislava, IRIS, pp 59-61.
- [14] Miron, Zelina, (2011) Stratégie a metódy rozvoja osobnosti dieťaťa, Bratislava, IRIS, pp. 216-221.
- [15] Erich, Petlák, (2016) Všeobecná didaktika, Bratislava, IRIS, pp 71-72.
- [16] Slávka, Hlásna et al., (2006) Úvod do pedagogiky, Bratislava, Enigma, pp. 61-64.
- [17] Miron, Zelina, (2011) Stratégie a metódy rozvoja osobnosti dieťaťa, Bratislava, IRIS, pp. 12- 15.
- [18] Matej, Papík & František, Janek, (1964) Názorné pomôcky v zemepise a dejepise, Bratislava, Slovenské pedagogické nakladateľstvo, pp. 167-169.
- [19] Erich, Petlák, (2016) Všeobecná didaktika, Bratislava, IRIS, pp. 170-171.
- [20] Slávka, Hlásna et al., (2006) Úvod do pedagogiky, Bratislava, Enigma, pp. 394-352.
- [21] Erich, Petlák, (2016) Všeobecná didaktika, Bratislava, IRIS, pp. 172-173.
- [22] Matej, Papík & František, Janek, (1964) Názorné pomôcky v zemepise a dejepise, Bratislava, Slovenské pedagogické nakladateľstvo, pp. 165-167.
- [23] Matej, Papík & František, Janek, (1964) Názorné pomôcky v zemepise a dejepise, Bratislava, Slovenské pedagogické nakladateľstvo, pp. 168.
- [24] Jeffrey, Zeldman, (2004) Tvorba webů podle standardů XHTML, CSS, DOM, ECMAScript, Brno, Computer Press, pp. 21-23.
- [25] Jiří, Hlavenka et al., (2006) Tvorba webových stránek. Jednoduše, srozumitelně, názorně, Brno, Computer Press, pp. 6.
- [26] Jiří, Hlavenka et al., (2006) Tvorba webových stránek. Jednoduše, srozumitelně, názorně, Brno, Computer Press, pp. 14-20.
- [27] Douglas, Vanduyne & James, Landay & Jason, Hong, (2005) Návrh a tvorba webů. Vytváříme zákaznický orientovaný web, Brno, Computer Press, pp. 19-23.
- [28] Ivan, Turek, (2014) Didaktika, Bratislava, Wolters Kluwer, pp. 309-317.
- [29] Nick, Vandome, (2003) Začínáme s... Tvorba webových stránek, Praha, SoftPress, pp. 8-16.
- [30] Douglas, Vanduyne & James, Landay & Jason, Hong, (2005) Návrh a tvorba webů. Vytváříme zákaznický orientovaný web, Brno, Computer Press, pp. 172-173.
- [31] Nick, Vandome, (2003) Začínáme s... Tvorba webových stránek, Praha, SoftPress, pp. 120-126.
- [32] Pavel, Roubal, (2009) Počítač pro učitele, Brno, Computer Press, pp. 10-27.
- [33] Michal, Kukura, (2014) Implementácia digitálnych technológií do MŠ, Bratislava, Metodicko-pedagogické centrum, pp. 51-55.

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