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Piotr Paweł Laskowski
e-mail:p.laskowski@uwb./edu.pl
University of Bialystok

ADAPTATION OF NEW TECHNOLOGIES TO VISUALIZE AND FUNCTIONALIZE POST-PRIMARY SCHOOL'S INTERNET WEBSITES

Introduction

Emphasizing one's presence in the Internet has now become a norm which everybody is trying to satisfy, starting from private individuals and finishing with businesses and social and public organizations. Gradually, Internet websites have started to transforminto complex structures presenting content and offering up-to-date information enriched by additional facilities supporting interaction with a user thus enabling comments on current information and access to content regardless of a device they are working at. Therefore, message efficiency and popularity is built with the help of new technologies of content presentation and the entire range of attributes and functionalities offered by those technologies. In the article, I will attempt to depict how post-primary schools deal with the adaptation of the entire range of available tools. Moreover, I will indicate areas which seem to be ignored, omitted or used to a minimum extent by schools to satisfy constantly evolving needs of users.

Internet websites may also be developed with the use of new technologies, which is perceived very positively by a final user who is now very difficult to astound. Users' experienceoriented designas well as utility and accessibilityare the criteria thanks to which we visit Internet websites willingly and willingly return there. Powerful communication and computer technology supports it and is ready to be used for exploration and presentation in the Web.Thus a question arises here whether secondary schools of the educational system are able to use this potential.

Data and method

The analyzes presented in the article use data from a research survey carried out by the CAWI method (Computer-Assisted Web Interview – a computer supported interview with the help of the Internet website) among administrators and persons managing secondary schools' websites of Podlaskie and Śląskie Provinces. The choice of the Podlaskie Province schools was obvious due to the author's place of residence. Moreover, this Province is conventionally frequently referred to in the literature as Poland "B", i.e. a region of considerable disproportions in a social as well as economic level of development. Comparing data with the Śląskie Province, i.e. the region of the country at a higher level of development, I would like to check how profoundly the level of new technologies' adaption differs in those two selected provinces. Is it really true that realization of visualization and functionality of secondary school's Internet websites andthe use of Internet technology in the Podlaskie and Śląskie Provinces differs in the level of adaption? Are those differences visible in the examples of selected functionalities and the use of tools implementing them? Where do shortcomings occur and which component elements are realized according to generally binding standards ofInternet websites design and function?

Browsing through GUS (Central Statistical Office of Poland) data for 2014, we will find out that Podlaskie is a province of the lowest population density among all 16 provinces, which amounts to 59 people per km^2, whereas Śląskie Province is characterized by the highest population density amounting to 373 people per km^2. Analyzing the rate of average monthly income per person in households compared to the State's average in 2014, we will read that it was proportionally 93,9% for the Podlaskie Province and 103.1% for the Śląskie Province. A proportional share of households equipped with durable goods with regard to theProvinces was the following: in the Podlaskie Province 65% households had a computer with the Internet access (including broadband Internet – 59%), whereas in the Śląskie Province – 73% (52%) respectively(GUS). The prior prepared survey was sent to secondary schools in the two selected Provinces. In the Śląskie Province, 915 school units were distinguished whereas in the Podlaskie – 370. Within these schools, 775 secretary offices' e-mail addresses were successfully obtained for the Śląskie Province and 282 for the Podlaskie Province.

The percent of responses to the survey amounts to 8.8 in the Śląskie and 35.1 in the Podlaskie Province, which equaled 68 and 99 filled in surveys respectively.

Persons managing and administering secondary schools' Internet websites took part in the survey. Internet website's administration is a time-consuming task requiring at least basic expertise in several fields that are generally connected with the Internet, graphics, typography, information architecture and basic knowledge and skills in operating content management systems or basic HTML language. Analyzing data with regard to the position held by a website's administrator in a school, we will find out that in a vast majority of cases this position is held by Computer Science and Mathematics teachers, i.e. 50.3%. There are no significant differences between the Provinces with regard to the position held by school's employees administering a website.

Table 1. Website administrator's position in a school with regard to the Provinces (%)

Position in a school	Podlaskie	Śląskie	Total
Computer Science and Mathematics	51.02	49.25	50.30
Humanities and Social Sciences	18.37	19.40	18.79
Natural and Technical Sciences	19.39	10.45	15.76
Administration and other positions	11.22	20.90	15.15
Total	100.0	100.0	100.0

Source: Author's study.

A comparison containing length of employment in a given school including an additional position of the Internet website's administrator seems interesting. The task requiring constant care and learning new things is entrusted to people who have mostly been employed in a school for more than 6 years (87.43% of indications). Here, we also observe no differences between the Province and length of employment.

Table 2. Length of employment in a school with regard to the Provinces (%)

	1 year	2 years	From 3 to 5 years	6 years and more	Total
Podlaskie	3.03	1.01	9.09	86.87	100.00
Śląskie			11.76	88.24	100.00
Total	1.80	.60	10.18	87.43	100.00

Source: Author's study.

According to the data, sex is not a distinguishing factor in the Provinces too. The share is equal with a slight majority of women in the Śląskie Province – 52,9%, and men in the Podlaskie Province – 56,6%. It seems wrong to assume that websites' administration is an occupation dominated by men.

A participatory model of creating a website

Participatory management involves engagement of not only teachers but also pupils in working on website management. Encouraging participation in creating the content, photo gallery or even helping to adapt new functionalities seems essential in the school website's development. Sharing one's own reflections on functionality and contributing new ideas to improve the school website's image and its functioning in the Web, where competition is very high, is absolutely necessary. Young people are up-to-date with new technologies and innovations connected with the Internet. Therefore their ideas and remarks on the website's perception may significantly influence its popularity. Advantages of participatory management are undeniable. They build a school community, motivate to action and achieving set goals, and affect self-esteem of people engaged in the project. Creativity of youth and teachers stimulates original ideas and the process of changes which, in consequence, may lead to the sense of satisfaction and success for the work done for a school's image in the Web. However, advantages may not always appear at once. Thus they will more often than not require patience and time. The people involved will have to find sufficient extra time whereas a teacher administering a school website must also have some organizational and animation skills apart from necessary expertise and skills in website design.

Table 3. Are there any other people involved in school website's administration except you? (%)

	Yes	No, only I administer a website	Total
Podlaskie	36.4	63.6	100.0
Śląskie	41.2	58.8	100.0
Total	38.3	61.7	100.0

Source: Author's study.

Single-person care of a website, that is administration and other works connected with its maintenance, is declared by 61.7% respondents. We may claim that it is more often than not narrowing the website's function solely and exclusively to one-sided broadcast of information. Nevertheless, there appear 38.3% respondents who declare that there are other people engaged in working on the website apart from them. If we look at the data more closely, we will see that among those more than one-person teams declared, only 37.1% are such where a pupil also participates and helps in school website's administration.

Table 4. Are pupils involved in school website's creation? (posting information, helping in operation…)(%)

	Yes	No	Total
Podlaskie	38.4	61.6	100.0
Śląskie	35.3	64.7	100.0
Total	37.1	62.9	100.0

Source: Author's study.

It is worth adding that one school in the Podlaskie Province declared participation of 24 people in co-creating the website whereas in the Śląskie Province – 14 people. Unused potential of both teachers and pupils in their joint work on the website seems to be a weak point, which is also

undermined with regard to their dynamics to adapt new information and communication technologies, position in the Web and future progress. Participation of both teachers and pupils in the Internet website development may result in interesting solutions applied to its creation and speed up the process of adapting new functionalities for the needs of schools creating and improving their Web images.

Creating school websites

Over 20 years ago, the first Internet website accessible through URL address was created. Since then, overwhelmingly dynamic progress has taken place. Internet websites are now extremely developed structures accompanied by several additional functionalities. Today, an Internet website is not merely files placed on the server displaying a specific content but also a database storing information, additional scripts supporting both display and operation of the website and mechanisms to administer its content, created dynamic menu sets and sub-websites generated through clicking on appropriate items found in those sets. Websites' graphics is also attractive; it benefits from new functions such as nonstandard fonts, rules written down in cascading style sheets presenting and specifying how given content should look like starting from a description of a specific element and finishing with a position this element should take with regard to other elements or the Internet browser's window. What is more, separation of a document's structure from its presentation affects increased websites accessibility and facilitates implementation of changes in their structure. It is also possible to launch different versions of the website's image depending on a device we use to surf the Web. Application of new solutions in websites' creation contributes to their extraordinary dynamics with regard to the browsed content depending on questions addressed at a website. Moreover, administration of information placed on a website has become simple, i.e. through a panel managing both content and menu items as well as additional sets that may appear on selected sub-websites depending on the selected content or a position in the website's menu. All above mentioned functionalities and many others are offered by Content Management Systems (CMS). They are a modern solution facilitating the creation of a website from scratch without the need to possess expertise in programming and computer science. Secondary schools willingly use these solutions to create

their websites. Many Content Management Systems are available subject to open license. However, there are also payable copyrighted solutions written by authors specifically for the school's needs. 75.8% of school websites in the Podlaskie and Śląskie Provinces are created with the help of the Content Management System . No significant differences are observed here between the Provinces. The most popular solution is a free CMS system called Joomla!, which has excellent support for the Polish language, both the website's background and front page. What is more, it has a very large base of additions extending its possibilities. All necessary elements for a school website can be found implemented in CMS itself whereas additions extending it by extra functions can also be found free of charge subject to open license. Many popular components will also have a ready to use support for the Polish language.

Table 5. Content ManagementSystems (CMS)

	Joomla!	Wordpress	Author's System	PHP-Fusion	I don't know	Total
Podlaskie	66.67	1.75	15.79	3.51	12.28	100.00
Śląskie	43.59	17.95	17.95	10.26	10.26	100.00
Total	57.29	8.33	16.67	6.25	11.46	100.00

Source: Author's study.

Script installation and its correct operation obviously depend on a choice of a server currently meeting basic requirements where databases software and PHP language will operate in parallel displaying dynamic www sites together. In most cases, this service is payable but, on the other hand, a hosting company assures its safety and reliability as well as cyclical backup of files placed on a server. Absolute majority of schools use such servers from various service providers (80,7%). It is worth adding here that such a service is free of advertisements which may pop up on a school website's version using a free of charge server thus showing content which is more often than not inappropriate for a school's profile. Not mentioning inconvenience caused by viewing such a website and discredit brought to a school's image.

Accessibility

The problem of creating Internet websites and services accessible to as great variety of users as possible, that is web accessibility, is a formidable challenge for websites' designers. Besides, it is a wide branch of science. I would like to focus on its several vital elements, which schools frequently underestimate, ignore, or simply omit.

Browsers easily find websites thanks to, among others, their construction and content, keywords and website's description contained in meta tags. What is more, website's positioning is undeniably affected by factors connected with its operation such as a page load time or optimized code. Google is, in principle, the most frequently used browser which, starting this year, in displayed search results, has been promoting websites accessible on mobile devices like tablets and smart phones, that is in lower resolutions than those offered by notebooks or PCs. Adaptation to lower resolutions apparently are mechanisms that are appropriately implemented into a school's website which can recognize what device we are viewing a page from and depending on this will display this page in an appropriately composed format to fit a smaller display unit. A lot of young people have smart phones with the Internet access and communicate with others and view Internet websites just through this device. Many schools have started to perceive the potential of mobile websites appropriately adjusting their Internet pages. This change seems to have just begun to develop and all we can do is hope this tendency will continue to increase. Now nearly 65% of schools have Internet websites adapted to small screens.

Table 6. Is your website adapted to correct display on portable devices such as tablets or smart phones?

	Yes	No	Total
Podlaskie	38.75	61.25	100.00
Śląskie	29.82	70.18	100.00
Total	35.04	64.96	100.00

Source: Author's study.

Websites should also be accessible to people exposed to digital exclusion, including the elderly, disabled, or worse educated. Since the end of April, 2015, pursuant to binding provisions of law, public institutions' websites should adjust to them. According to these laws, it is necessary to provide unlimited and secure access to the Internet to everybody, regardless of work environment and restrictions resulting from disability. The guidelines have been prepared by W3C Consortium, and the currently binding version is WCAG numbered 2.0 (*Web Content Accessibility Guidelines*).

Selected functionalities

Functionalities effected by website's individual component elements help realize functions fulfilled by secondary schools' Internet websites. Let's now have a look at some of them, selected from a wide range of possibilities, such as contact forms, social networks, e-learning platforms and galleries.

The application of logistic regression allows to model belonging of a researched unit to a specific segment. In our case, it is a school having a website in social networks, a contact form, photos gallery and e-learning platform depending on various independent variables describing it[1]. The results in Table 7 mean that:

- The regression rate for the Province amounted to -1,418 whereas the significance of this result is lower than 0,001. When other variables remain stable, a chance of having a page in social networks for the Podlaskie Province is by 75.6% smaller than for the Śląskie Province;
- The regression rate for a type of school – a junior secondary school, amounted to -1,375 whereas the significance of this result is lower than 0,014. When other variables remain stable, a chance of having a page in social networks for a junior secondary school is by 74.7% smaller than in a case when a selected school will not be a junior secondary one;
- The regression rate for sex amounted to -1,050 whereas the significance of this result is lower than 0,012. When other variables remain stable, a chance of having a page in social networks for women administering a website is by 65% smaller than for men;

The regression rate for length of employment in a school amounted to 1,593 whereas the significance of this result is lower than 0,039. When other

variables remain stable, a chance of having a page in social networks for persons working in a school from 3 to 5 years is by 392% higher than for persons working in a school longer than 6 years.

Table 7. Your website in social networks, includingFacebook and YouTube

	Does your school have its website in social networks?	Has a profile on Facebook	Has a profile on YouTube
	Exp(B)	Exp(B)	Exp(B)
Podlaskie Province	0.24*	0.23*	0.38*
Vocational School	1.21	1.01	1.05
Technical Secondary School	1.99	1.84	1.96
Junior Secondary School	0.25*	0.22*	0.54
Secondary School (Liceum)	1.89	1.37	0.85
Post-secondary School	0.81	0.65	0.77
Sex	0.35*	0.33*	0.74
Position in the school			
Computer Science and Mathematics	1.10	0.92	1.24
Natural and Technical Sciences	1.01	0.65	1.53
Humanities and Social Sciences	2.25	1.65	2.52
A number of hours spent on the website's service	1.04	1.03	1.06
Do other people administer the website?	0.48	0.49	0.79
Are pupils involved in helping with the website?	0.87	0.79	1.14
Length of employment in the school – from 3 to 5 years	4.92*	2.08	4.21*
Constant	57.30	108.08	0.32
% of correct classifications	77.4	75.8	81.4

Source: Author's study.

Notes: The table includes a percent of correct classifications for each model, which allows to draw a conclusion about a degree of the model fitting the data. Hosmer-Lemeshow test of goodness-of-fit has been estimated for each model, which confirms good fit of the model,or lack of differences in the distribution of up-to-date and predictable values.

Exp(B) included in the Table is interpreted by a comparison to the value of 1 thus expressing the obtained difference in per cent.

Logistic regression relies on the assumption of additive variances of ratios determining a chance (risk) of occurrence of a phenomenon we are interested in. Summarizing the above presented results, it can be said that schools in the Podlaskie Province, junior secondary schools in particular, where websites' administrators are female teachers with a longer length of employment, are subject to a greater risk of a specific kind of exclusion from the effective use of functionalities on the Internet websites that are connected with a scope of social communication (social networks, Facebook, or YouTube). It seems that availability of Internet technologies in schools of Podlaskie and Śląskie Provinces is similar. It is a social variety of teachers that may be a vital factor differentiating the use of their potential in practice. It is confirmed by the results of the analysis for users having a Facebook and YouTube profile and the use of additional functionalities of school websites (a contact form, photos gallery, or e-learning platform).

The results for the variable: Has a profile on Facebook:

- The regression rate for a junior secondary school amounted to -1,501 whereas the significance of this result is lower than 0,001. When other variables remain stable, a chance of having a profile on Facebook for the Podlaskie Province is by 77% smaller than for the Śląskie Province;
- The regression rate for a type of school – a junior secondary school, amounted to -1,472 whereas the significance of this result is lower than 0,005. When other variables remain stable, a chance of having a profile on Facebook for a junior secondary school is by 77.7% smaller than in a case when a selected school will not be a junior secondary one;
- The regression rate for sex amounted to -1,099 whereas the significance of this result is lower than 0,008. When other variables remain stable, a chance of having a profile on Facebook for women administering a website is by 66.7% smaller than for men.

The results for the variable: Has a profile on YouTube:

- The regression rate for the Province amounted to -0,960 whereas the significance of this result is lower than 0,037. When other variables remain stable, a chance of having a profile on YouTube for the Podlaskie Province is by 61.7% smaller than for the Śląskie Province;
- The regression rate for the length of employment in a school amounted to 1,437 whereas the significance of this result is lower than 0,024. When other variables remain stable, a chance of having a profile on YouTube for persons working in a school from 3 to 5 years

is by 320.8% higher than for persons working in a school longer than 6 years.

The occurrence of additional functionalities.

Table 8. Does the website have additional functionalities of a page such as:

	Contact form	**Photos gallery**	**E-learning platform**
	Exp(B)	Exp(B)	Exp(B)
Podlaskie Province	0.83	1.08	0.56
Vocational School	0.69	0.32	0.63
Technical Secondary School	1.06	3.04	3.08*
Junior Secondary School	1.01	1.31	0.84
Secondary School (Liceum)	0.53	0.52	1.10
Post-secondary School	7.20*	0.75	1.97
Sex	0.64	0.78	1.92
Position in the school			
Computer Science and Mathematics	1.04	5.23*	1.32
Natural and Technical Sciences	0.98	2.85	1.15
Humanities and Social Sciences	0.67	14.95*	1.32
A number of hours spent on the website's service	1.02	1.12	1.05
Do other people administer the website?	0.54	0.26	0.60
Are pupils involved in helping with the website?	0.58	1.20	1.45
Length of employment in the school – from 3 to 5 years	1.29	1.98	0.64
Constant	12.72	12.65	0.10
% of correct classifications	66.5	88.8	75.2

Source: Author's study.

The results in the above Table for the variable *Contact form* mean that:

– The regression rate for a type of school – a post-secondary school, amounted to 1,975 whereas the significance of this result is lower than 0,007. When other variables remain stable, a chance of having a contact form for post-secondary schools is by 620.4% higher than in a case when a selected school will not be a post-secondary one.

The results in the above Table for the variable *Photos gallery* mean that:

– The regression rate for a school function such as teaching Computer Science and Mathematics amounted to 1,655 whereas the significance of this result is lower than 0,037. When other variables remain stable, a chance of having a photo gallery for the variable Computer Science and Mathematics is by 423.4% higher compared to such functions as Administration and other functions;
– The regression rate for a school function such as teaching Humanities and Social Sciences amounted to 2,705 whereas the significance of this result is lower than 0,027. When other variables remain stable, a chance of having a photo gallery for the variable Humanities and Social Sciences is by 1394.8% higher compared to such functions as Administration and other functions.

The results in the above Table for the variable *E-learning platform* mean that:

– The regression rate for a type of school - a technical secondary school, amounted to 1,125 whereas the significance of this result is lower than 0,045. When other variables remain stable, a chance of having an e-learning platform for a technical secondary school is by 208.2% higher than in a case when a selected school will not be a technical secondary one.

It may be noticed that possession of additional functionalities is a factor that strongly differentiates schools but within the educational system's characterizations and not the Provinces' localization. Schools in the Podlaskie and Śląskie Provinces did not differ with regard to a tendency to apply such additional functionalities. Distinguishing factors occur within schools. A chance for having a contact form is six times higher in post-secondary schools. A chance for having a photo gallery is four times higher in schools where websites are administered by teachers of IT and Mathematics and thirteen times higher in schools where websites are administered by teachers of Humanities and Social Sciences whereas the use of e-learning

distinguishes technical secondary schools. On the other hand, the length of employment in a school did not matter, neither a number of hours devoted to website's service. Pupils' involvement in helping with the page or other persons' engagement in website's administration did not affect a chance for applying these functionalities too. Therefore, we apparently deal here with structural dependence referring to schools' features and education of persons administering websites. There were no statistically significant regional differences with regard to the potential availability of IT technologies. It is an extremely positive fact showing that accessibility and application of Internet technology may be an important factor overcoming negative social and economic differences between the regions.

Conclusions

Schools face a great challenge connected with the creation and management of their image in the Internet with the help of available tools to create Internet websites. Up-to-date and valuable school profiles in social networks provide support too. It is important to adapt new trends in the field of websites' design and the use of a range of possibilities offered by constantly developing information and communication technology quite promptly so that a school's website is not an ancient museum of old-fashioned techniques for youth and other people viewing it but a modern and regularly updated page keeping pace with progress and currently binding designing trend in its visual message and functionalities applied.

Achieving these goals will certainly be easier if other people are involved in a website's service: teachers and pupils who will support websites' administrators. Cooperation may appear very fruitful and motivate to development whereas shared duties will obviously relieve administrators.

Little importance is attached to a widely understood accessibility of post-primary school Internet websites. Compliance with these requirements for people with disabilities and older people is very important. Since June 1 2015, the Council of Ministers is in force. It specifies the minimum requirements that must be fulfilled. Adaptation of www pages to fit small display units seems to be a priority today, when every young person has a smart phone with the access to the Internet and communicates with the world and views the Internet resources via this device. Schools face many challenges but building their image in the Web is also one of them. Active presence, interesting and up-to-date information and well administered

profiles in social networks will certainly result in the www page's popularity in the Web.

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Summary

Adaptation of new technologies to visualize and functionalize post-primary school's Internet websites

Web sites over time turn into complex, content-presenting and informative content with additional functionalities that facilitate interaction with the user by allowing him to either comment or access content regardless of the device on which the user is working.Communication efficiency and popularity are built with new content presentation technologies and a whole range of attributes and functionality offered by these technologies.In this article I will try to present how schools handle the adaptation of the whole range of availabletools. I will point out places that the school seems to ignore or skip. User-oriented design, usability and accessibility are the criteria by which we are happy to visit websites and we come back to them.The question we can ask whether the school can use the potential of new technologies?

Keywords: newtechnologies, school, websites, availability, usability, creating an image