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The use of social media by Polish and Slovak students and their digital competences

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Abstract

In this study, the main goal is to indicate the differences between the use of SM by Polish and Slovak students and the relationship between the use of SM and digital competences. A questionnaire survey conducted among Polish and Slovak students of technical faculties was used to obtain the data. The analysis was performed using the methods of multivariate statistical analysis. The study was conducted in October-December 2018 in parallel in Poland and Slovakia. In the course of the study, 172 questionnaires were returned from students from Poland and 171 from students from Slovakia, representing a manoeuvrability of 49% and 65% respectively. The main finding of the research on the use of SM is the more frequent use of SM by Slovak students. The results showed that Twitter and Instagram (after Facebook, which was used by over 98% of respondents) are more often (significantly) used by Slovak students, and YouTube and WhatsApp by Polish students. Our results also show that information competences demonstrate much less correlation with the use of social media compared to IT competences. The presented research results aim to fill the gap focusing on finding a relationship between the use of SM and digital competences. This approach results primarily from the universal use of SM and the need to develop competences that are the basis for effective functioning in the professional and private sphere in the era of digitization.

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1. Introduction

Social media play an increasingly important role in our private and professional lives. Thanks to the use of social media, it is possible to create attitudes, acquire knowledge, develop cognitive skills or build professional and social commitment. They are an essential element of the Internet, which plays an important role in communication and information exchange [3]. The potential of social media is growing bigger year after year. The situation we found ourselves in due to the spread of COVID-19 has shown that the use of ICT solutions, including MS, in education is of key importance. In this situation, digital competences are an important factor determining the quality of life not only of an individual, but also of education organizations. Digital competences depend on the age, professional activity or education of a given person [19] and are part of the lifelong learning process [16, 34]. It is worth emphasizing that the research conducted so far shows that it is knowledge and skills, and not the mere access and use that play an important role in shaping competences [15, 22, 44]. However, the prevalence of SM and the ever-growing number of their users are part of the natural process of creating digital competences in the ICT environment [41]. This belief results from the fact that young people who live in a digital environment and are constantly connected to social media naturally develop digital competences [36]. On the other hand, easy access to digital resources and media does not guarantee that individuals will automatically have digital competences to take full advantage of them [3]. Research shows that SM is used by different age groups, but one of the groups that uses them most often are students [32].

The aim of this study is to find the differences between the use of SM by Polish and Slovak students and to indicate the relationship between the use of SM and digital competences. A survey method among Polish and Slovak students of technical faculties was used to obtain the data. The research was conducted using the above-mentioned method from October 2018 to December 2018. The main research questions are: Which social media services do the students use? Is there a difference between the level of involvement of Polish and Slovak students using SM? Is there a relationship between students' digital competences and the use of SM? Are there any significant differences in this respect among Polish and Slovak students?

Here introduces the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 10 pt. Here follow further instructions for authors.

2. Literature review

Social media is a common term for tools, services, websites and web applications that enable people to share information, opinions and interests [11, 38]. Kaplan and Haenlein classify social media in terms of two key elements, which include social presence and media richness [27]. Social presence refers to the forms of communication via the Internet that have two characteristic forms: synchronous and asynchronous. Both forms represent indirect communication, which is characterized by lower interaction between the participants of the communication process than in case of the face to face conversation. The authors emphasize that the greater the social presence, the greater the social impact the users have on each other's communication behavior. The other element characterizing social media, defined as the media richness, is related to the form of providing information in various forms, such as text, image, graphics, animation, etc., without causing ambiguity and uncertainty. Media vary in the degree of media richness they possess - that is, the amount of information that can be conveyed in a given period of time, therefore some of them are more effective in solving problems related to the ambiguity and uncertainty of the information provided.

Over the past decade, social media has been changing the way people, communities and organizations create, share and use information from each other and from companies [43]. SM make it possible to communicate faster and more effectively, observe immediate changes in life, and share personal experiences and opinions [42]. What distinguishes social media from traditional media is primarily reach, interactivity, usability and ubiquity. For businesses this means that social media would improve marketing, public relations, customer service, product development, decision making by the personnel, and other business activities based on information sharing and collaboration with consumers and employees [4, 39]. Other social groups, including students, are also active in social media because they provide easy access to resources, give freedom and autonomy in self-learning and give independence [35]. In addition, SM is an inexpensive platform that enables the acquisition, sharing and exchange of information, and this in turn affects

networking and maintaining relationships with others and spreading information and ideas [14, 28]. The use of SM has influenced the changes in the way of communication, cooperation and establishing relationships [2, 40]. Identifying the way in which students use social media and the directions of their use by students is crucial for universities and may contribute to the development of effective strategies facilitating the use of social media [30].

Actions undertaken by the users within SM can be divided into three types: interactive, active and passive [48]. Interactive activities include targeted interaction with others, e.g. commenting and sending messages. Active use refers to creating content in SM without targeting specific people. Viewing and consuming SM content is a passive action [47]. Undertaking by the users any type of the indicated actions is conditioned by their skills, e.g. in the field of information and communication technologies, which include the use of computers to search, evaluate, store, produce, present and exchange information, as well as to communicate and participate in cooperation networks via the Internet. According to the European Parliament and the Council, it is the skilled and critical use of information society technologies at work, leisure and communication that is digital competence [19]. A common element of many definitions of digital competences is the ability to use digital technologies in order to utilize and access information as well as learn, work or cooperate and function in society in a critical, responsible and creative manner [1, 24, 8]. In general, digital competences can be divided into IT and information competences. In the studies of Guzman-Simon et al. they used a similar division of digital competences of Spanish undergraduate students [20]. Digital competences are the desirable advantages of employees applying for employment in the most innovative companies [29].

3. Research methodology

For the purposes of this study, own research was conducted to analyze the use of SM by Polish and Slovak students and to present the relationship between the use of SM by Polish and Slovak students and the level of their digital competences. The following hypotheses were formulated in the study:

H 1. Polish and Slovak students use different SM.

H 2. Students' digital competences are related to the use of SM.

In the first stage of the study, digital competences were specified on the basis of available literature. The second stage included the selection of the research sample, development of the survey questionnaire, conducting the survey and statistical processing of the results obtained. On the basis of their own opinion, the respondents assessed their skills in the scope of the competences examined. The third stage of the research was to indicate which SM use both Polish and Slovak students and what their level of involvement is. At this stage, the analysis concerned the data of both, the account owners and those who use these accounts. The results obtained were also developed in terms of the impact of gender on the acquisition of competences. The fourth stage consisted in determining digital competences, both for Polish and Slovak students, which, in their opinion, they can demonstrate in relation to the accounts in various SM and their use.

The study was conducted in October-December 2018 in parallel in Poland and Slovakia. In the course of the study, 172 questionnaires were returned from students from Poland and 171 from students from Slovakia, representing a manoeuvrability of 49% and 65% respectively. The students surveyed represented engineering studies and undergraduate studies of the 1st and 2nd degree of both full-time and part-time studies. The study was conducted directly, with the use of the questionnaire. The reliability of the questionnaire was verified with the use of Cronbach's alpha determined at the level of $\alpha = 0.973$. Validation of the appropriate translation of the issues raised in the questionnaires was carried out during direct consultations of the Polish-Slovak research team.

IT competencies have been included: T1-write, edit and send text in a text editor, T2-verify the text by checking spelling / dictionaries, T3-insert images / symbols in a text editor, T4-insert and edit tables in a text editor, T5-use drawing / graphics applications such as Power Point, T6-move files /folder on the computer, T7-move files /folder on the smartphone, T8-move files /folder between devices, T9-use copy tools, T10-use cutting tools, T11-using the basic functions of spreadsheet, T12-compressing files, T13-connect and install new devices, e.g. printer, scanner, etc., T14-install the program on your computer, T15-search for and install a smartphone program / application, T16-Uninstall the program on your computer, T17-Uninstall the program / application yourself on your smartphone, T18-Programming in a specialist language, T19-Use internet search engines (e.g. Google, Yahoo etc.), T20-transferring data from a spreadsheet, T21-set up/create private email address, T22-send and receive e-mail, T23-send an email with attachments, T24-using e-mail/calendar systems, T25- using file-sharing programs (P2P), T26-creating websites,

T27-transfer photos from a digital camera to a computer, T28-transfer photos from a smartphone to a computer, T29-make calls via the Internet, T30-creating an electronic signature, T31-send/receive SMS/MMS from a mobile phone, T32-connect to the Internet using a mobile phone, T33-order and buy tickets online, T34-buy and sell goods via native websites, T35-making commercial transactions using languages other than native, T36-use IP telephony or Skype, T37-using an electronic signature, T38-participate in online communities, e.g. Facebook or Instagram. Information competences have been included: C1-locating pages with the information you need, C2-web browsing, C3-Finding the specific information you need on the websites of government agencies, C4-searching websites in a language other than Polish, C5-selection of the right information from the Internet, C6-organized file organization on your computer, C7-organize the information found by e.g. placing them in lists and tables, C8-assess the quality of information that can be found on the Internet, for example, whether it is old, biased or unreliable, C9-assess the security level of publishing information on the Internet, for example on Facebook, C10-entering information using a template on the web, C11-read and / or comment on the blog.

H 1. Polish and Slovak students use different SM.

The study took into account the different types of SM, which included both social networking sites, e.g. Facebook, publishing services such as, e.g. YouTube and Instagram or communication services such as e.g. WhatsApp. Table 1 presents the values of the U-Mann-Whitney coefficient for the use of social media and the place of residence of the respondents.

Table 1. Values of the U-Mann-Whitney coefficient for the use of social media and the place of residence of the respondents (Poland and Slovakia)

Variable	Statistics value		
	U	Z	p
Google plus account ownership	13 047.0*	- 2.191	0.028
Twitter account ownership	14 351.5	- 0.653	0.514
Instagram account ownership	13 278.5	- 1.878	0.060
YouTube account ownership	14 250.5	0.618	0.537
Use of Google plus	14 461.0	0.439	0.660
Use of Twitter	7 733.5*	- 9.462	0.000
Use of Instagram	10 356.0*	- 6.152	0.000
Use of YouTube	9 780.0*	6.230	0.000
Use of Messenger	14 435.0	0.464	0.643
Use of WhatsApp	13 094.0*	2.528	0.011
Use of skype	14 095.0	- 1.159	0.246
Social media accounts ownership	13 222.0	- 1.678	0.093
Use of social media	11 765.5*	- 3.540	0.000

* statistically significant values, '+' higher scores for Polish students '-' higher scores for Slovak students

The tests carried out confirmed significantly more frequent Google plus account ownership by Slovak students ($Z = -2.191$; $p = 0.028$). Significantly more frequent use of Twitter ($Z = -9.462$; $p < 0.000$) and Instagram ($Z = -6.152$; $p < 0.000$) by Slovak students and YouTube ($Z = 6.230$; $p < 0.000$) and WhatsApp ($Z = 2.528$; $p = 0.011$) by Polish students was also confirmed. In general, Slovak students are more likely to use social media ($Z = -3.540$; $p < 0.000$).

The relationship between the level of social media use and gender was also examined, using the Yule's phi coefficient of correlation and testing the percentage of people using these media among both genders. The obtained results indicate that men significantly more often have YouTube accounts ($U = -1.995$; $p = 0.023$), while women definitely more often have Instagram accounts ($U = 2.336$; $p = 0.010$) and use them ($U = 3.496$; $p < 0.001$). This was confirmed by both correlation measurements and statistical tests.

H 2. Students' digital competences are related to the use of SM.

Table 3 shows the existing, statistically significant correlations between IT and information competences and activity in social media and instant messaging. For greater clarity, competences for which no statistically significant correlation was demonstrated were removed from the template (T11, T18, T19, T20, C1, C3, C6, C7, C8). It can therefore be concluded that IT competences such as: using basic mathematical functions in a spreadsheet, programming in a specialized language, using internet search engines, transferring data from a spreadsheet to another program and vice versa, and information competences: locating websites containing the necessary information, finding specific information needed on government agency websites, organizing and storing files on a computer, and organizing the information found are not related to the use of social media. In general, information competences show much less correlation with the use of social media. Out of the 11 competences examined, as many as six did not show any statistically significant correlation. The remaining ones indicate at most two important relationships. The use of Twitter and YouTube has the greatest impact (similarly to IT competences) on information competences. The other media show only incidental impact. We observe a completely different situation in the case of IT competences. Of course, it is arguable whether they affect the use of specific social networking sites, or the reverse, but the nature of some of these competences indicates that social media and instant messaging services do affect competences.

The strongest impact – on as many as 22 IT competences (58%) - has the use of Twitter. Importantly, the use of Facebook and Google is considered so widespread that no significant correlation with these media has been confirmed (hence their absence in the list). On the other hand, greater involvement manifested in the possession of accounts in these media already indicates occasional correlation with the selected competences. We also observe a high frequency of connections between IT competences and the use of YouTube (42% of responses), WhatsApp (39% of responses) and possession of the Instagram account (34%). Obviously, the differences in the occurrence of correlations with regard to the use of specific media and possession of accounts in these SM services are largely determined by the way of using these media and their specificity.

On the other hand, the competences shaped the most by the use of social media is buying and selling goods via websites in languages other than Polish and making calls over the Internet (6 responses). These media also have a strong influence on writing, editing and sending text in a text editor as well as searching and installing a smartphone program/application (five responses each).

Statistically significant positive correlations were found between 13 IT competences and one information competency and the frequency of using social media (Table 2). In five cases, however, these correlations were not significantly higher than the corresponding ones calculated for Slovak students (defined as not significant). In the case of Slovak students, only one (negative) statistically significant correlation was indicated, and it was higher than for Polish students.

Table 2. The occurrence of statistically significant correlations between the frequency of using social media and information and IT competences, and the indication of significant differences from the point of view of students from Poland and Slovakia

Competences	T7	T8	T13	T14	T15	T16	T17	T18	T21	T28	T30	T33	T34	T35	C4
Poland	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X
Slovakia	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
difference	PL	-	PL	PL	PL	PL	PL	-	SK	-	-	-	PL	PL	PL

The most significant differences in favor of increasing information and IT competences are observed in Poland for those owning a Google plus account, Instagram account and using WhatsApp (Table 3). For Slovakia, these results are much lower and the most noticeable impact is observed in case of those owning accounts on Twitter and Instagram. Using Instagram reduces the level of competences of Slovak students in as many as 8 cases and using Google plus in Poland - in six cases. There is also a possibility that cause-and-effect relationship has the opposite direction here - Polish students with lower skills more often use Google plus and Slovak students - Instagram. The competencies of the respondents from groups using and not using specific social media were also compared (Table 4). For this purpose,

the U-Mann-Whitney test was used, which is an alternative test for the means. Despite the previous standardization of variables, we approach such analyses with reserve, treating the data still as qualitative.

Table 3. Number of higher and lower competency scores among people using selected social media in Poland and Slovakia

Variable	Higher results		Lower results	
	PL	SK	PL	SK
Google plus account ownership	31	5	0	0
Twitter account ownership	8	16	0	0
Instagram account ownership	27	14	0	4
YouTube account ownership	11	7	0	3
Use of Google plus	1	4	6	1
Use of Twitter	13	0	0	0
Use of Instagram	19	6	0	8
Use of YouTube	2	1	1	0
Use of Messenger	3	1	0	0
Use of WhatsApp	23	11	0	1
Use of skype	8	8	0	0

Table 4. Values of the U-Mann-Whitney statistics (significant) for comparisons of competences of respondents from groups using specific social media and not using them

Activities	Account ownership				Use of					
	Google plus	Twitter	Instagram	YouTube	Twitter	Instagram	YouTube	Messenger	WhatsApp	Skype
T1		0.03								0.00
T3										0.01
T5									0.02	
T6	0.01				0.03					
T7			0.00							
T8			0.03						0.00	
T9									0.05	
T10			0.02							
T12				0.02	0.01					
T13	0.02		0.00	0.01						
T14	0.00	0.04	0.00	0.00						
T15	0.00	0.01	0.00	0.00		0.03				
T16		0.00	0.00	0.00						
T17	0.00		0.00	0.00						
T18			0.04			0.03				
T19	0.05				0.00	0.04	0.01			0.02
T21									0.03	
T26		0.01	0.02			0.04				
T27	0.05									
T28	0.01									
T29			0.01		0.00		0.01	0.03	0.03	
T30		0.04	0.00	0.03		0.01				
T31					0.01	0.01				
T32			0.01		0.00	0.00				
T33	0.01		0.00		0.03				0.01	
T34	0.01		0.00						0.03	

T35	0.02	0.00	0.00			0.01
T36				0.02		0.02
T37		0.00				
T38		0.01		0.00		
C1	0.01			0.00	0.03	0.00
C2	0.00					0.04
C4	0.04	0.00				0.00
C9				0.02		
C10		0.00				
C11				0.03	0.00	

It turns out that having an Instagram account has the greatest impact on differentiation in assessing IT competences. This is the case for 18 of the 38 competences. In 10 cases, such an impact is observed in relation to possession of a Google plus account. This medium also influences the rating of the three information competences and is the strongest source of influence. The use of five types of social media has a positive impact on the rating of IT competences - finding and installing a program/application for a smartphone and the use of internet search engines and locating websites containing the necessary information on the part of information competences. In the case of making calls via the Internet (T29), the use of some social media improves (having an Instagram account, using WhatsApp) and some others (using Twitter, YouTube, Messenger) worsens the rating of this competence.

Using the data after the standardization of the variables, a parallel test - one-tailed test - for means was carried out. The discriminatory point was the possession/use of social media and instant messaging data. It turned out that the most statistically significant differences in favor of higher user (owner) competences are observed in relation to Instagram account owners. This concerned 55% of IT competences. In 42% of cases, the competences of the owners of Google accounts and in 32% of cases, the competences of those with Twitter account, were significantly higher compared to those without such accounts. With regard to IT competences, the strongest impact - on 5 out of 11 competences - had a Twitter account. On the other hand, the most susceptible to the impact of owning accounts in social media were skills such as searching and installing a program/application for a smartphone (T15) and installing the program on a computer single-handedly (T14), transferring photos from a smartphone to a computer (T28), telephoning via the Internet (T29) and buying and selling goods via websites in languages other than Polish (T35).

The question is whether only owning an account and not using it can be taken into account. Owning an account is associated with a certain prestige, the desire to be in a given group and at the same time requires certain activities related to its creation and sometimes maintenance. On the other hand, the indication of the use of a given account or social networking site reflects the respondents' current actions undertaken (at the time of the survey) in terms of their activity. So these are two different types of activity that are essentially complementary. In the next approach, an attempt was made to verify the hypothesis about the importance of the quantity and frequency of using various social networking sites and instant messengers. The verification took into account standardized results and summarized indications in four approaches: the sum of the accounts owned, the sum of the indicated activities on the accounts, the use of instant messaging, and the total sum of all activities. Spearman's rank correlation coefficient was used as a measure. It turned out that with regard to IT competences, the number of statistically significant correlations in the case of using accounts or instant messaging did not exceed 10. On the other hand, statistically significant correlations with owning an account on social networks were significant in as many as 23 cases (63%). With regard to information competences, statistically significant correlations were reported sporadically. Each of the determined correlations was positive, so owning or using accounts has a significant positive impact on IT and information competences.

4. Discussion and Conclusions

Information and communication technology (ICT) is ubiquitous in the workplace and there is a high demand for ICT-proficient workers [46]. Social media is a rich source of real-time information that allows instant access and dissemination of information worldwide [10, 21]. We can find many studies that attempt to investigate how these media are used and what factors contribute to it [30, 31]. An important element of the use of SM, from the point of view of students, is supporting learning through the use of information and communication technology solutions [6].

It is influenced by many factors, such as personality traits, that may determine involvement in the use of SM [9] which were not taken into account in this study. An important research topic is also the influence of SM on the learning process [25] and the identification of factors increasing the motivation to learn [5]. On the one hand, social media support educational opportunities [17], on the other - as research confirms [13], they allow for monitoring changes in digital competences of the respondents. Moreover, the use of social media enables multitasking and can effectively improve results [33]. SM may, on the one hand, compete with existing universities - by offering competitive courses [26], on the other hand, they may be used by them for the same purpose.

The conducted research did not focus on the factors that influenced the use of SM, but on the ways of their use [30]. The obtained results correlate with the study by Meşe and Gökçe [31] in terms of the most frequently used social networking sites. In this study, Instagram (Slovakia) and WhatsApp (Poland) were also highlighted as the most commonly used. Additionally, Twitter (Slovakia) and YouTube (Poland) were distinguished in the results of our research. What speaks in favour of Instagram and WhatsApp is, as Meşe and Gökçe emphasize, instant communication and interaction in a more intimate environment [31]. What speaks in favour of YouTube, in turn, is presenting information in the form of video. In addition, YouTube is the largest channel for the promotion and distribution of new and original content. In turn, Twitter forces posting short, meaningful messages but does not require mutual relations. Twitter is mainly used not for social purposes, but for informational purposes and as a means of keeping up with the news [7]. This research also indicates interesting results regarding differences in the use of SM associated with gender. Men own or use YouTube accounts more often while women - Instagram.

The use of SM is influenced by many factors, such as education and experience. Hargittai and Hinnant emphasize that the differences in digital skills determine the actions taken by Internet users more than the mere access to technology [23]. Even in highly developed economies with universal access to the Internet, the level of digital competences may vary [45]. In turn, Ramadan Eyyam et al. emphasize that it is important not only to build awareness of various WEB 2.0 solutions, but also the ability to use them [18]. The self-assessment of skills, which in this study was analyzed similarly to the studies by Schmid and Petko [37], is influenced, among others, by access to information technologies at home or school and experience in using these technologies [49]. The studies presented in this article are a part of this approach, which examines the relationship between self-assessment of competences and the use of SM. The presented research results aim to fill the gap focusing on finding a relationship between the use of SM and digital competences. This approach results primarily from the universal use of SM and the need to develop competences that are the basis for effective functioning in the professional and private sphere in the era of digitization.

The research confirmed that information competences show definitely less associations with the use of social media compared to IT competences. In both cases, the greatest impact on competences has the use of Twitter and Yotube. The other media show only incidental impact. Another conclusion is a significantly higher relation between competences and the use of social media in the case of Polish students.

On the other hand, having an Instagram account is the most significant factor in differentiating the assessment of IT competences followed by owning a Google plus account. This medium also influences the rating of the three information competences and it is the strongest source of differentiating ratings.

5. Limitations of studies and future research directions

The presented research has its limitations. Firstly, the assumptions made did not allow determining whether the use of SM affects digital competences or the opposite, although it seems that the lack of competences (at least the basic ones) would make it impossible to use SM. Moreover, the study took into account only selected activities undertaken by SM users, which included their activity in chats and discussion forums, posting various comments in SM and the increasingly popular posting of on-line reports. Secondly, the study considered two situations: owning an account by a user, which is not synonymous with using it, and using an account that was not further defined in terms of interactive, active and passive activities. Such an assumption raises some doubts and does not allow for generalization of the research results. Thirdly, digital competences were only submitted to students' self-assessment and were not verified in any way. Factors such as accessibility, education (from the secondary school level), and place of using SM or user experience were also not taken into account, which could also affect the self-assessment of competences.

For many young people, the use of MS is not only very obvious, natural and intuitive, but necessary for most of them to develop personal and professional relationships. In our opinion, the use of SM is advanced to an extent allowed

by the development of, among other things, digital competences. Future research should take into account not only the digital competences declared by students, but also the verification of these competences. It seems to be an interesting question: how does the direction of SM prosperity affect the need to develop specific skills. Therefore, apart from the questionnaire survey, it is also worth using tests to verify knowledge and skills in the field of IT and information competences. The data obtained in this way will indicate to a greater extent the relationship between the use of SM and digital competences. By comparing the attitudes, needs, scope of use and knowledge of students about SM, you can get results that will not only have significant implications for education, but will also show the impact of SM on employee motivation [12] or the impact of social media on the organization's results.

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