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Digital literacy and e-learning experiences among the pre-service teachers data

Łukasz Tomczyk

Uniwersytet Pedagogiczny im. Komisji Edukacji Narodowej, Poland

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ABSTRACT

The data show different issues connected with the digital literacy of pre-service teachers. The data were collected in 2019 among 450 teachers of pedagogical studies in Poland. The research was conducted in the biggest Polish university that trains educational staff, the Pedagogical University of Cracow. The data describe issues related to the self-evaluation of digital literacy in using text editors, spreadsheets, and presentation and graphic software. They also describe experiences with e-learning: participation in obligatory online classes, searching for information on the Internet, participation in paid and free e-learning courses, and participation in informal study groups.

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Specifications table

Subject	Social Sciences, Education
Specific subject area	The research is in the area of media education (pedagogy). The data show the level of self-evaluation of digital literacy among students of pedagogy, and experiences with e-learning among pre-service teachers.
Type of data	Table
How data were acquired	Diagnostic survey carried out online

(*continued on next page*)

E-mail addresses: lukasz.tomczyk@up.krakow.pl, tomczyk_lukasz@prokonto.pl

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	Direct URL to research tool (file tool. docx): Tomczyk, Lukasz (2020), "E-learning and digital literacy among pre-service teachers", Mendeley Data, v2http://dx.doi.org/10.17632/c58bkzr9hf.2
Data format	Raw
Parameters for data collection	The sampling criteria were: status of the student of the Pedagogical University of Cracow in the direction of pedagogy, specialization: teaching.
Description of data collection	The data were collected through quantitative pedagogical research. For this purpose, the technique of the diagnostic survey and online questionnaire was used. The data are available in a standard layout in the Mendeley repository. Each of the variables used in the article is described in the first line [9].
Data source location	Institution: Pedagogical University of Cracow City/Town/Region: Cracow, Lesser Poland Country: Poland Latitude and longitude (and GPS coordinates, if possible) for collected samples/data: Latitude: 50.061664 | Longitude: 19.921143
Data accessibility	Repository name: Mendeley Data identification number: E-learning and digital literacy among pre-service teachers, 10.17632/c58bkzr9hf.2 Direct URL to data: https://data.mendeley.com/datasets/c58bkzr9hf/2 File: Data in Brief repository.xls Instructions for accessing these data: Standard access via Mendeley

Value of the data

- The data show the level of digital literacy and e-learning experiences among students at the biggest pedagogical university in Poland. They enable a comparison of digital literacy self-evaluations and e-learning experiences of the respondents.
- The data may be used by media educators who deal with diagnosing the key competencies in the use of digital media among pre-service teachers, as well as researchers who conduct analyses of the conditions of academic e-learning.
- The data may be used to plan experiments, surveys and longitudinal studies connected with the use of new technologies among pre-service teachers. This type of research also enables the tracking of changes which are occurring in the rapidly developing information society.
- The data may contribute to the improvement of the obligatory academic courses used in preparing future teachers. It may also be of interest to those who design solutions to modernize school and university education. The data may also be of interest to media sociologists.
- Due to the COVID-19 pandemic and the resulting radical changes in the system of academic education, the data are unique. The vast majority of academic activities (lectures, discussions) has been transferred into the online world. This means that our data may prove useful when comparing the self-evaluation of digital literacy and e-learning experiences from before and during the COVID-19 pandemic.

1. Data description

Table 1 presents descriptive statistics related to the experiences of the students with online education during the last year. The data show basic descriptive statistics for the main activities connected with the obligatory online classes, searching for information on the Internet, and participation in paid and free e-learning courses and study groups that use ICT. The scale for the data in Table 1 was between 1 - never and 5 - very often.

Table 2 presents descriptive statistics related to the self-evaluation of digital literacy in four key areas. The scale for the data in Table 2 is the evaluation of the respondent's own digital literacy and is between 1 - very poor and 5 - very strong.

Table 3 presents data on the Pearson's linear correlation between e-learning activities and the self-evaluation of digital literacy. The table presents 10 indicators. The confidence level is provided below the table.

Table 1
Descriptive statistics for experiences in e-learning among pre-service teachers.

	I took part in online courses required in the official study curriculum or as part of my professional development	I search for relevant resources in the Internet to complete online classes	I took part in free e-learning courses (online courses, for example, foreign languages, ICT)	I took part in paid online courses	I took part in online joint study groups
Valid	450	450	450	450	450
Missing	0	0	0	0	0
Mean	2.353	2.984	2.051	1.173	1.587
Std. Error of Mean	0.074	0.077	0.073	0.062	0.072
Median	3.000	3.000	2.000	1.000	1.000
Mode	3.000	4.000	1.000	0.000	0.000
Std. Deviation	1.579	1.629	1.542	1.312	1.517
Skewness	−0.090	−0.503	0.203	1.247	0.757
Std. Error of Skewness	0.115	0.115	0.115	0.115	0.115
Kurtosis	−1.109	−0.910	−1.100	0.944	−0.499
Std. Error of Kurtosis	0.230	0.230	0.230	0.230	0.230
Shapiro-Wilk	0.914	0.890	0.910	0.806	0.863
P-value of Shapiro-Wilk	< .001	< .001	< .001	< .001	< .001
Minimum	0.000	0.000	0.000	0.000	0.000
Maximum	5.000	5.000	5.000	5.000	5.000

Table 2
Descriptive statistics for self-evaluation of digital literacy among pre-service teachers.

	How do you rate your ICT skills in the following areas? - Using text editor (e.g. Word)	How do you rate your ICT skills in the following areas? - Using spreadsheet (e.g. Excel, Calc)	How do you rate your ICT skills in the following areas? - Using presentation software (e.g. Power Point)	How do you rate your ICT skills in the following areas? - Using graphic software (e.g. Picasa, Gimp)
Valid	450	450	450	450
Missing	0	0	0	0
Mean	3.791	3.158	3.902	2.898
Std. Error of Mean	0.045	0.046	0.043	0.053
Median	4.000	3.000	4.000	3.000
Mode	4.000	3.000	4.000	3.000
Std. Deviation	0.949	0.972	0.922	1.130
Skewness	−0.656	−0.013	−0.712	−0.012
Std. Error of Skewness	0.115	0.115	0.115	0.115
Kurtosis	0.253	−0.094	0.248	−0.663
Std. Error of Kurtosis	0.230	0.230	0.230	0.230
Shapiro-Wilk	0.868	0.896	0.855	0.914
P-value of Shapiro-Wilk	< .001	< .001	< .001	< .001
Minimum	1.000	1.000	1.000	1.000
Maximum	5.000	5.000	5.000	5.000

Table 3
Linear correlation between digital literacy self-evaluation components and e-learning experiences.

Variable	1	2	3	4	5	6	7	8	9	10
1. I took part in online courses required in the official study curriculum or as part of my professional development	–									
2. I search for relevant resources in the Internet to complete online classes	0.604***	–								
3. I took part in free e-learning courses (online courses, for example, foreign languages, ICT)	0.477***	0.426***	–							
4. I took part in paid online courses	0.326***	0.235***	0.486***	–						
5. I took part in online joint study groups	0.366***	0.308***	0.468***	0.579***	–					
6. How do you rate your ICT skills in the following areas? - Using text editor (e.g. Word)	0.260***	0.311***	0.175***	0.088	0.187***	–				
7. How do you rate your ICT skills in the following areas? - Using spreadsheet (e.g. Excel, Calc)	0.181***	0.186***	0.170***	0.185***	0.197***	0.555***	–			
8. How do you rate your ICT skills in the following areas? - Using presentation software (e.g. Power Point)	0.226***	0.290***	0.126**	0.018	0.108*	0.748***	0.490***	–		
9. How do you rate your ICT skills in the following areas? - Using graphic software (e.g. Picasa, Gimp)	0.238***	0.178***	0.233***	0.233***	0.265***	0.395***	0.532***	0.390***	–	
10. Age	0.074	0.024	0.090	0.107*	0.007	0.120*	0.097*	0.037	0.015	–

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Tables 4–7 present data regarding the relationships between the self-evaluation of digital literacy and online activities.

2. Experimental design, materials and methods

The research was conducted in the second half of 2019 in Poland (Pedagogical University of Cracow). There were 450 respondents - students of pedagogical studies. The average age of the respondents was 22.6 years, with standard deviation 4.232. The goal of the research was the self-diagnosis of the level of basic digital literacy and experiences connected with e-learning. The data are of particular value from a temporal perspective because they cover the experiences of the respondents during the COVID-19 pandemic. Thus, they enable comparisons of the results from before the pandemic and at present. The data are particularly useful for improving the curricula of studies used in preparing future teaching staff [1].

The research was conducted using a triangulation of the research tools. For this purpose, the scale measuring the self-evaluation of digital literacy was used [2] [3]. To diagnose e-learning experiences, mixed research tools were used. By this means, the following elements were investigated: participation in obligatory online classes [4], searching for information on the Internet [5], participation in paid and free e-learning courses [6] and participation in informal study groups [7]. Each item had a classic 5-degree Likert scale which enabled self-evaluation and the determination of the frequency of use of e-learning solutions during the last year. The research was

Table 4
Multilinear regression analysis where the dependent variable is self-evaluation of digital literacy in using text editor.

$N = 450$	Dependent variable - Using text editor (e.g. Word) $R = 0.337$ R^2 = 0.113 R2= 0.103 F(5.444)=11.400 $p<0.001$					
	β	SE	b	SE (b)	t(444)	P
			3.187079	0.093799	33.97764	0.000000
I took part in online courses required in the official study curriculum or as part of my professional development	0.098	0.059566	0.059041	0.035810	1.64873	0.099910
I search for relevant resources in the Internet to complete online classes	0.227310	0.057358	0.132455	0.033423	3.96303	0.000086
I took part in free e-learning courses (online courses, for example, foreign languages, ICT)	0.010087	0.057362	0.006207	0.035299	0.17585	0.860490
I took part in paid online courses	−0.070134	0.057562	−0.050743	0.041647	−1.21841	0.223715
I took part in online joint study groups	0.117453	0.057531	0.073481	0.035993	2.04156	0.041786

Table 5
Multilinear regression analysis where the dependent variable is self-evaluation of digital literacy in using spreadsheet.

$N = 450$	Dependent variable - Using text spreadsheet $R = 0.253$ R^2 = 0.064 R2= 0.053 F(5.444) =6.100 $p<0.001$					
	β	SE	b	SE (b)	t(444)	P
			2.716749	0.098672	27.53318	0.000000
I took part in online courses required in the official study curriculum or as part of my professional development	0.051914	0.061207	0.031951	0.037670	0.84817	0.396798
I search for relevant resources in the Internet to complete online classes	0.098544	0.058937	0.058786	0.035159	1.67200	0.095228
I took part in free e-learning courses (online courses, for example, foreign languages, ICT)	0.021149	0.058942	0.013324	0.037132	0.35882	0.719902
I took part in paid online courses	0.082133	0.059148	0.060835	0.043810	1.38860	0.165649
I took part in online joint study groups	0.090223	0.059116	0.057786	0.037862	1.52621	0.127669

intended as diagnostic and as one of the elements in an international joint project of universities from Latin America, the Caribbean and Europe [8]. The data collected also enable longitudinal studies embedded in the opportunities paradigm of media pedagogy. The whole tool presents a satisfactory level of inner coherence: McDonald's $\omega = 0.804$; Cronbach's $\alpha = 0.796$; Gutmann's $\lambda 6 = 0.843$.

Table 6
Multilinear regression analysis where the dependent variable is self-evaluation of digital literacy in using presentation software.

$N = 450$	Dependent variable - Using presentation software $R = 0.308$ R^2 = 0.095. R2= 0.0848 F(5.444)=9.322 $p<0.001$					
	β	SE	b	SE (b)	t(444)	p
			3.396852	0.092093	36.88518	0.000000
I took part in online courses required in the official study curriculum or as part of my professional development	0.092363	0.060194	0.053948	0.035159	1.53443	0.125637
I search for relevant resources in the Internet to complete online classes	0.238903	0.057962	0.135253	0.032815	4.12173	0.000045
I took part in free e-learning courses (online courses, for example, foreign languages, ICT)	0.002472	0.057966	0.001478	0.034657	0.04264	0.966005
I took part in paid online courses	−0.104471	0.058169	−0.073437	0.040889	−1.79600	0.073174
I took part in online joint study groups	0.060028	0.058137	0.036487	0.035338	1.03251	0.302394

Table 7
Multilinear regression analysis where the dependent variable is self-evaluation of digital literacy in using graphic software.

$N = 450$	Dependent variable - Using graphic software $R = 0.319$ R^2 = 0.101 R2= 0.0917 F(5.444)=10.073 $p<0.001$					
	β	SE	b	SE (b)	t(444)	p
			2.319072	0.112434	20.62599	0.000000
I took part in online courses required in the official study curriculum or as part of my professional development	0.119421	0.059965	0.085485	0.042925	1.99153	0.047035
I search for relevant resources in the Internet to complete online classes	0.016724	0.057741	0.011603	0.040063	0.28963	0.772234
I took part in free e-learning courses (online courses, for example, foreign languages, ICT)	0.065802	0.057746	0.048215	0.042312	1.13952	0.255100
I took part in paid online courses	0.076237	0.057947	0.065677	0.049921	1.31563	0.188978
I took part in online joint study groups	0.141246	0.057916	0.105218	0.043143	2.43880	0.015127

3. Ethics statement

The data were collected among students of pedagogical studies. Participation in the research was voluntary. Each of the students was able to refuse to take part or withdraw from the research at any stage. The research was conducted by a team of qualified researchers with experi-

ence in quantitative pedagogical studies within the opportunities paradigm of media pedagogy. The diagnostic survey was designed in such a way as to ensure the anonymity of the respondents. At the beginning of the data collection process, the students were also informed about the goal of the research, the procedure, data storage and the methods of analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have, or could be perceived to have, influenced the work reported in this article.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dib.2020.106052.

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