THE DEVELOPMENT OF DIGITAL COMPETENCES AND ATTITUDE TOWARDS E-LEARNING

Laura Fink*
GEA College,
Slovenia
laura.fink@gea-college.si

Nataša Makovec
GEA College,
Slovenia
natasa.makovec@gea-college.si

Jaka Vadnjal
GEA College,
Slovenia
jaka.vadnjal@gea-college.si

Abstract

We have recently been witnessing a significant shift from fully classroom-based learning to blended learning. As a result, the purpose of this study is to validate the differences in digital skill levels among different groups of students (faculty and higher vocational) in Slovenia. The methods used included statistical analysis for mean differences (T-test, one-way ANOVA test), linear regression for hypothesis testing, and Chi-square for possible bias testing on a total of 223 data points. The results are based on a questionnaire that includes the following constructs: 1.) student engagement; 2.) efficient use of the e-learning platform; 3.) perception and attitude towards e-learning; 4.) digital readiness; 5.) skill development; and 6.) digital infrastructure. They indicate that digital skills differ depending on work experience, self-awareness, the study programme, and form, as well as the formal educational level attained after graduation. The study supports the idea that different groups of students differ in their digital skills and digital readiness, which proves to be relevant for their study engagement.

Key Words

Digital skills; digital competence; e-learning; motivation; study engagement.

*Corresponding Author

INTRODUCTION

The emergence of the Covid-19 pandemic brought about a number of socioeconomic challenges. Many countries implemented measures to reduce live interaction with people in order to manage this uncertain situation. This resulted in the closure of educational institutions as well as a significant shift away from traditional classroom-based teaching and learning towards an online approach. While higher education institutions have moved online and transformed their teaching and learning methods, it is unclear whether this shift will result in positive learning outcomes (Ratten, 2020).

While numerous studies have been published on the pandemic, only a few have addressed the outcomes of e-learning and e-teaching. However, the literature presents a number of learning and teaching challenges that teachers and students face. These difficulties include the inability to access or use e-learning and e-teaching tools; difficulties adjusting, particularly for students living in rural areas and from low-income families; as well as stress, depression, and anxiety (Mseleku, 2020). As a result, it is clear that Covid-19 has caused significant disruption in the educational system. However, the extent of its effects remains unknown (Bryson and Andres, 2020). Furthermore, there has been little research on the potential positive outcomes of these activities.

The study is based on the fact that digital skills are nowadays required for efficient learning. By examining whether digital skills can improve study engagement and have an impact on student achievement, it addresses the research gap that the relevant literature previously identified (Wild and Schulze Heuling, 2020). Therefore, the study addresses the differences in the levels of digital competence among different groups of students and their effect on students' engagement. These questions should be tested in various contexts. In particular, this study addresses research gaps, including on students who are employed and are more aware of their digital gap and develop their digital skills more regularly and at a faster pace. The study shows that relevant job experiences substantially contribute to the advanced digital competences that are required in an e-learning environment, while personal use of digital resources by digital natives is less relevant for learning efficiency. Moreover, we explain the characteristics of the group of students who feel more competent to master advanced digital tools.

This paper's outline is as follows: We begin with a literature review to generate hypotheses before continuing with a presentation of the sampling, methodology, and essential demographics. The research findings, which also include the provision of results and statistical calculations, follow demographics. We conclude the paper with a discussion and interpretation of the research findings, as well as some suggestions for future research.

LITERATURE REVIEW AND HYPOTHESES

We divide the literature review into four parts. The first part delves into the most recent innovative trends in educational technology and educational

models, including blended learning. The second part discusses the potential interdependence of learning achievement, engagement, and e-learning. Thirdly, study engagement and e-learning are discussed as two related items. In the fourth and final section of the literature review, we discuss the relationship between digital readiness and students' academic achievement and conclude with the three hypotheses.

Innovative educational technology and contemporary educational models

Higher education institutions have been steadily working to implement cutting-edge technologies that provide new methods of delivering and creating learning in recent years (Singh, 2021; Huda, 2022; Lockee, 2021; Deng and Tavares, 2013; Jones, 2012; Orton-Johnson, 2009). In addition to supporting communication between teachers and students, fostering student learning communities, managing student learning progress, and allowing students to enrol in online courses, an e-learning environment also aids in the distribution of study materials (Islam, 2013). Digital technology, such as a learning ecosystem known as an "e-learning environment," integrates with traditional teaching and learning methods. Technology-enabled platforms substantially contribute to educational innovation (Eze et al., 2018), as well as to new teaching and learning methods. The benefits of e-learning environments include infrastructure cost savings, contribution to learning content digitisation for easy and flexible sharing, and integration into the global educational environment (Pham et al., 2019). Technology-enhanced learning experiences have recently changed to reflect the shift in the educational paradigm from an instructor-led to a student-centred learning strategy (Ituma, 2011; Olelewe and Agomuo, 2016). Higher education institutions have created cutting-edge e-learning environments to create education that is of higher quality and student-centred (Goodyear, 2020; Islam, 2013).

E-learning in higher education uses digital technologies to create educational materials for teaching and learning, student instruction, and course editing in order to maximise student success (Fry, 2001; Parkes et al., 2015; Jošt Lešer and Berginc, 2023). With the popularity and development of multimedia and networking technologies like high-speed internet, high-definition video, smart devices, intelligent features of learning management systems, and more recently, artificial intelligence systems, e-learning has quickly developed (Cidral et al., 2018; Eze et al., 2018; Vadnjal, 2018). In universities across the world, improvements in e-learning environments have been noted (Oke and Fernandes, 2020; Castillo-Merino and Serradell-López, 2014; Naveed et al., 2017). E-learning technology tools and systems improve the quality of learning experiences and outcomes by ensuring that materials and strategies are tailored to individual students' needs and preferences (Castro, 2019; Means et al., 2013).

Blended learning (Gaebel et al., 2021) can take many forms, such as “online and offline, on-site and off-site, synchronous and asynchronous, formal and informal, vocational and recreational, and more”. Hybrid or

blended learning is defined as "flexible combinations of different learning modes (e.g., in-person and online) to enhance learning experiences" (Gaebel et al., 2021). For the purpose of this study, blended learning refers to learning where a group of students attends a combination of face-to-face meetings and online synchronous and asynchronous activities. In other contexts, blended learning could refer to learning in which some students attend courses in person while others synchronously attend remotely. The most common learning models that teachers can use in blended learning include the well-known flipped model (Bredow, 2021; Pozo Sanchez et al., 2020; Tomas et al., 2019; Wilson, 2020), as well as the rotational model, the flex model, the self-blend model, the enhanced virtual model (Dakhi et al., 2020; Hrastinski, 2019; Singh et al., 2021; Bizami et al., 2022; Staker and Horn, 2012; Christensen et al., 2013), and others.

From the simple adoption of face-to-face technology-assisted instruction to the complex adoption of lecture capture, online chat, discussion boards, and social networking services, the higher education sector is adopting blended learning as the norm to improve the effects of using e-learning environments as more active approaches to promote student engagement (López-Pérez et al., 2011). Interestingly, these types of dynamic adoption of e-learning systems show mixed results for student satisfaction with the learning experience (Xiao et al., 2020; Lyons and Evans, 2013), the reduction of dropout rates (López-Pérez et al., 2011), students' academic performance (López-Pérez et al., 2011; Roffe, 2002), as well as for reflective and critical thinking (Saadé et al., 2012).

Learning achievement, engagement, and e-learning

Engagement refers to the quality of effort that students put into educationally purposeful activities and contributes to desired learning outcomes (Cook and Steinert, 2013). The deeper engagement of students can bestow on them beneficial educational practices that further lead to holistic learning (Coates, 2006; Hodge et al., 2017). Student engagement depends on commitment and learning diligence throughout the learning experience (Coates, 2006; Henrie et al., 2015) and is an important predictor of academic development (Carini et al., 2006).

Studies show that students' e-learning experiences can predict their achievement (Shanta, 2021). For example, Goh et al. (2017) argue that interaction with a teacher, particularly with peer students, is critical for learning outcomes and satisfaction. In a research experiment, Kiviniemi (2014) found that blended approaches to learning, which include both face-to-face and e-learning components of the course, improved student performance more than the traditional approach.

Study engagement and e-learning

Study engagement is essential in any learning environment, including face-to-face, online, and blended courses (Henrie et al., 2015). Coates (2006) demonstrates, based on a more inclusive and holistic view of the student

experience, that student engagement emerges from a dynamic relationship between students and their institutional context where student engagement is more focused on students' experiences in both internal and formal structural settings. Digital learning experiences can improve learning quality by complementing and facilitating interactions with the instructor or other students, as well as providing easy access to support, tools, and additional content (Abbad et al., 2009).

However, when discussing findings – including how an e-learning environment enables students to be more engaged and perform better in their studies (Islam, 2013), and technology can connect students, teachers, and course content (Mehdinezhad, 2011) - there is a strong need to consider the context of the study. Prior to the pandemic, online teaching and learning were merely supplements to traditional ones in blended settings. On the other hand, in some fully online courses today, students have no synchronous meetings with the teachers at all. It is widely accepted that synchronous communication and in-person communication increase engagement. Lee et al. (2019) created a measurement instrument for student engagement in an e-learning context where "psychological motivation, peer collaboration, cognitive problem solving, interactions with instructors, community support, and learning management" all contribute to student engagement.

According to the literature, complete e-learning programmes generally result in lower completion rates and engagement (Lee et al., 2019; Bates, 2019), whereas e-learning is thought to be especially beneficial in blended settings or as a supplement to traditional learning environments. E-learning, for example, is important in higher education institutions for enhancing the educational experience by providing materials and activities and thus supporting traditional methods of teaching and learning in the classroom. Students benefit from the introduction of e-learning in a variety of ways, including the flexibility of time and place of learning, the efficiency of access to knowledge and information, interactivity, differentiation, and self-design (Arkorful and Abaidoo, 2015). Furthermore, various online activities such as reading, writing, watching video tutorials, online self-assessments, and online meetings affect students' engagement in different ways (Dewan et al., 2019).

Digital readiness and student's academic achievement

Digital readiness refers to students' technological knowledge, skills, attitudes, and competences in using digital technologies to meet educational goals and expectations in higher education (Hong and Kim, 2018). The digital competence framework (Carretero et al., 2017) includes five competence areas (information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving) and examples of how digital competences are used in learning and employment. Furthermore, previous research findings (Kim et al., 2018) support the notion that students' digital readiness is important for academic achievement and

that it affects both students' academic achievement and student engagement.

Although Martzoukou et al. (2020) and Findeisen and Wild (2022) supported the finding that the frequency of chosen digital activities in everyday life affects digital competence profiles, Margaryan et al. (2011) discovered a significant gap between students' digital skills proficiency in informal contexts and formal learning. Students' digital readiness encompasses the meaningful use of digital skills for academic work, the development of digital skills through active participation and critical evaluation, and the application of digital skills and strategies to academic work. This can be one of the most important links between a student's e-learning experience and academic achievement.

Several studies (Findeisen and Wild, 2022; Lucas et al., 2022) have built their research upon the Digital Competence Framework, which recognises the importance of digital competence in higher education and vocational schools (Carretero et al., 2017). Others (Caena and Redecker, 2019; Nunez-Canal et al., 2022) investigate teachers' digital competences using the Educators' Digital Competence (EDC) framework.

Since digital competence facilitates better student achievement and is now required for students to be able to follow the learning process, it is critical to recognise individual differences among students' digital competence levels and different sets of digital skills, or digital skill profiles. According to the literature, different groups of students have varying levels of digital competence. A study by Wild and Schulze Heuling (2020), for example, supports the notion that students who enter vocational schools have lower levels of digital competence than students who enter higher education institutions.

Findeisen and Wild (2022), on the other hand, argue that divergences can be explained by differences in school-leaving qualifications prior to enrolment in tertiary educational programmes. Not only that, but Delcker (2022) supports the idea that the level varies between different types of vocational schools. Similarly, Krelova et al. (2021) support the findings from Wild and Schulze Heuling (2020) that digital competences differ by study programme specialisation, study level, and study form.

Our aim is to validate the differences in digital skill levels among separate groups of students in Slovenia. Firstly, between faculty students and higher vocational students, and secondly, between part-time students and full-time students. Therefore, hypotheses 1 and 2 suggest the following:

H1. Variation between digital skills and digital readiness is evident for different groups of students.

H2. Part-time students base their study engagement on a different level of digital competence than full-time students.

Since previous research (Kim et al., 2018) has found that digital competences are nowadays essential and required for students'

engagement and academic achievement, we strive to support this assumption in our setting and propose hypothesis 3:

H3. Digital competences and digital readiness have a positive effect on study engagement.

METHODOLOGY, SAMPLING, AND DEMOGRAPHICS

The measurement instrument on which this study is based is made up of six constructs: 1.) student engagement; 2.) effective use of the e-learning platform; 3.) e-learning perception and attitude; 4.) digital readiness; 5.) skill development; and 6.) digital infrastructure.

Student engagement is measured using a scale developed by Handelsman, Briggs, Sullivan, and Towler (2005). Study engagement is defined as the psychological and behavioural effort and investment a student makes in learning, understanding, or mastering the skills and knowledge involved in study work (Fredricks, Blumenfeld, and Paris, 2004). Students' interactions with e-learning systems can influence their study engagement.

Three criteria adapted from Chu and Chen (2016) serve as indicators of the e-learning platform's effectiveness. Higher education students' self-assessment of their personal capabilities and resources is also a precursor to the acceptance of e-learning components. Perceived behavioural control is known to be a positive predictor of intention to adopt e-learning (Chu and Chen, 2016).

Students' positive or negative perceptions and attitudes toward e-learning are measured by the four items adapted from Chu and Chen (2016). In addition, to measure the extent to which e-learning contributes to digital competences, the authors added yet another item: "I believe that I will improve my digital business competences through e-learning."

The items used to assess digital readiness were adapted from Hong and Kim (2018), who assessed students' perceived digital competences for academic engagement. Three additional items within the digital readiness construct were adapted from the measurement instruments about the use of digital skills in Slovenia (ACS, 2020; Zupan, 2016; DESI, 2022). By doing so, we want to demonstrate that digital readiness is critical for students' academic success.

Finally, three items on students' self-reported skill development and three items on the assessment of the surrounding national digital infrastructure are included in the measurement instrument. The former items reflect student awareness of their own skills gap, the frequency with which they develop their skills, and their awareness of the opportunities to use data-driven technologies, where the latter items reflect students' trust in the national digital infrastructure, in national digital education, and in teachers' digital qualifications. These items were adapted from measurement instruments for the use of digital skills in Slovenia (ACS, 2020; Zupan, 2016; DESI, 2022).

Students had access to the questionnaire via the online surveying tool from November 2021, the second month of the study year, until the end of

the study semester in January 2022. Due to the ongoing Covid-19 pandemic, many study activities were delivered in part or entirely through e-learning platforms. As a result, the link to the online survey was made available in different courses' virtual classrooms, and teachers were asked to encourage students to participate in the study. In total, 223 questionnaires were completed.

We analysed two different samples. Higher vocational study programmes last two years, during which time students earn 120 ECTS and gain more practical skills and competences. All students are enrolled as part-time students. Since 2014, the higher vocational school has used e-learning and e-teaching. Students are well aware of what to expect from online learning programmes. The second sample consists of faculty students. The faculty offers study programmes on two (Bologna) levels: bachelor's (1st level, 180 ECTS, full-time and part-time three-year programmes) and master's (2nd level, 120 ECTS, the part-time programme). The proportion of master level programme respondents in the total sample is so small that no interpretation of the results is provided for this specific group of students.

The faculty first introduced online programmes in the study year 2020-2021. The faculty and the vocational school are both institutions operating at tertiary level in education (higher education). Both institutions are not directly vertically coherent or aligned (Coherent Curriculum, Edglossary, n. d.). Students at the higher vocational school reach the 6th level of education after graduation, while graduates of the faculty reach the 7th level of education according to SOK (Slovenian qualification framework, n.d.), and the 5th and 6th levels of education according to EOK (European qualification framework, n.d.). Students must have completed secondary school in order to enrol in either the faculty or the higher vocational school. In terms of age, full-time faculty students are the youngest of the three groups of students, followed by part-time faculty students. Part-time students at the higher vocational school are the oldest of the three groups on average.

RESULTS

In this section, we first present the sampling method and testing, following which, we examine the questionnaire's internal consistency before the survey results are presented. Cronbach's alpha is used to check the consistency of the questionnaire. Statistical analysis for mean differences (T-test, one-way ANOVA test), linear regression for hypothesis testing, and Chi-square for possible bias testing are also employed.

Sample representativeness

The sample (N = 223) includes 32% of the entire population of the studied organisation. The results of the chi-square test (less than $P = 0.00$) show that the observed sample is not representative of the entire population. The reasons for that lie not only in the size of the sample, but also in the coverage, or representativeness, of certain categories of the population. The

sample should include more than 87 % of the population and declare an approximate similar distribution of chosen categories (e.g., age, programmes, other characteristics) as the population for the sample to be considered representative. The age structure of the sample is shown in Table 1.

Table 1: Sample and population: age structure

	Born in 2002 and 2001	**Born from 2000 to 1996**	**Born from 1995 to 1990**	**Born from 1989 to 1981**	**Born in 1980 or later**	**Total**
Survey	60	89	24	40	8	221*
	27%	40%	11%	18%	4%	100%
Enrolled	130	360	87	72	57	706**
	18%	51%	12%	10%	8%	100%

* Two students did not declare their year of birth. The total sample contains 223 responses.

The population includes graduates. The structure of the sample according to the type of higher education institution is shown in Table 2.

Table 2: Sample and population: type of higher educational institution

	Faculty of Entrepreneurship (FE)	**Higher Vocational School (VS)**	**Graduates at FE or VS**	**Total**
Survey	136	85	2 (both FE)	223
Enrolled	352	290	64	706

Reliability / Internal consistency of a questionnaire

The measurement instrument includes 25 items and six constructs. Items were measured on a five-point Likert scale from 1 to 5, where (1) means “totally disagree” and (5) means “totally agree.” The examination of the internal consistency of the five constructs and the entire measurement instrument has shown that the two constructs (“efficient use of the e-learning platform” and “digital readiness”) are highly consistent ($0.80 < \alpha < 0.90$). The constructs “student’s engagement in studying” and “skill development” are just consistent ($\alpha > 0.60$). Although the construct “digital infrastructure” is close to being internally consistent, measured by a reference value of Cronbach's, it has been shown that items of two joint constructs, “skill development” and “digital infrastructure”, when considered together, reached an internal consistency of 0.71.

On the other hand, the value of Cronbach's alpha for the construct "perception and attitude towards e-learning" ($\alpha = 0.92$) suggests that the omission of some items could be reconsidered in a possible replication of this study. Similarly, the internal consistency of the entire measurement instrument suggests small differences between the five constructs measured. Namely, our calculations suggest that Cronbach's alpha, which measures the internal consistency of the questionnaire, is 0.9, which is higher than the anticipated marginal value of 0.7 (Hair et al., 2006) and supports the adequacy of the questionnaire. The values of Cronbach's alpha for all of the constructs are displayed in Table 3.

Table 3: Number of items and results of Cronbach's alpha

	Number of items	**Cronbach's alpha**
Student's engagement in studying	4	0.63
Efficient use of the e-learning platform	3	0.87
Perception and attitude towards e-learning	5	0.92
Digital readiness	7	0.80
Skill development	3	0.61
Digital infrastructure	3	0.53
All items	**25**	**0.90**

Survey results and hypothesis testing: the differences between two samples

In Tables 4 and 5, the survey results are collected. In both tables, mean values for the different samples are given, and the p-value between the two groups is calculated with a t-test (heteroscedasticity and unequal variances were assumed). Table 4 provides the significant differences between the full-time (faculty only) and part-time students (both from the higher vocational school and the faculty).

Table 4: Mean values and significant differences between the full-time and part-time students (self-reported measurement)

Full-time students (faculty) (N=78) Part-time students (faculty and vocational school) (N=145)	Av. Full.	Av. Part.	P-value	Sig.
Student's engagement in studying (Handelsman, Briggs, Sullivan, and Towler, 2005)				
I will make sure to study regularly.	4.21	4.49	0.0015	***

I will find ways to make the course interesting to me.	4.19	4.38	0.0375	**
I desire to learn the material.	4.64	4.68	0.6321	
I will have fun in class.	4.64	4.59	0.5728	
Efficient use of e-learning platform (Chu and Chen, 2016)				
I have the knowledge necessary to use the digital learning system.	4.22	4.30	0.4917	
I have control over the digital learning system.	3.92	3.96	0.7796	
I have the resources necessary to use the digital learning system.	4.14	4.23	0.4183	
Perception and attitude towards e-learning (Chu and Chen, 2016)				
I feel positive about digital learning.	3.72	4.37	0.0000	***
Studying via digital learning is a good idea.	3.74	4.37	0.0000	***
Studying via digital learning is a wise idea.	3.73	4.34	0.0000	***
All things considered, using the digital learning system is beneficial to me.	3.83	4.32	0.0005	***
I believe that I will improve my digital business competences through e-learning. (*)	3.88	4.12	0.0748	*
Digital readiness (first four items adapted from Hong and Kim, 2018; items five to seven adapted from ACS, 2020; Zupan, 2016; DESI, 2022)				
I can generate keywords to search for information for academic work.	3.97	4.29	0.0060	***
I can interact with classmates using real-time communication tools (e.g., video conferencing tools or messengers).	4.32	4.43	0.3088	
I can share my files with classmates using online software.	4.13	4.25	0.3367	
I can collaborate with classmates using online software.	4.21	4.23	0.7890	
I have mastered at least one online survey tool.	4.12	3.77	0.0098	***
I understand how to use social networks (e.g., FB, Instagram, and LinkedIn) for business purposes.	4.19	4.29	0.4109	
I know how to use web design tools and create a simple website or blog (e.g., WordPress).	3.23	3.12	0.5429	
Skill development (adapted from ACS, 2020; Zupan, 2016; DESI, 2022)				
I regularly improve my digital skills.	3.74	4.03	0.0231	**
I am aware of the shortcomings in my digital technology skills, and I am trying to diminish them.	4.01	4.16	0.2016	

I am well acquainted with and understand the opportunities of data-intensive technologies (e.g., artificial intelligence, analytics, big data, etc.).	3.42	3.61	0.1354	
Digital infrastructure (adapted from ACS, 2020; Zupan, 2016; DESI, 2022)				
I know that some services are available to me as a citizen online (e.g., e-government, e-taxes, e-banking, e-health).	4.17	4.59	0.0001	***
In Slovenia, we have a good digital infrastructure, the possibility of connecting to the Internet, and modern equipment.	3.82	3.99	0.1592	
In Slovenia, we have digitally qualified teachers and developed digital learning platforms.	3.58	3.72	0.2630	

* p<0.1
** p<0.05
***p<0.001

As seen from Table 4, we first examine students' engagement and studying. Results show that part-time students are more engaged and ready to put in much more effort to make their studies interesting. Regarding students' perception of e-learning, the results reveal a significant difference between the two groups. The attitude towards e-learning is significantly higher among part-time students (according to all of the variables).

Results show that the full-time faculty students feel more competent in using advanced online tools compared to the part-time students (of the faculty and the higher vocational school). This finding suggests that younger generations should not be simply regarded as being more digitally skilled, but that the specific target group, as well as the purpose and the specific type of digital skill, should be considered.

Moreover, a higher level of competence regarding the use of digital tools among part-time students may be explained precisely by their work experience. Usually, on-the-job needs and requirements, accompanied by the frequent use of digital tools, contribute to higher competence and increased efficiency. Looking at the assessment of skill development and digital infrastructure, it appears that part-time students are more interested in improving their computer skills and are more aware of the availability of different digital tools, which can be, again, probably best explained by their professional position, tenure, as well as professional experiences and their employers' expectations.

Table 5: Mean values and significant differences between full-time faculty students, part-time faculty students, and part-time higher vocational students

Higher Vocational School (N=85) Full-time (faculty) (N=78) Part-time (Faculty)(N=60)	High. Voc.		Full-time		Part-time f.		P-value	Sig.
Statement	Av.	R	Av.	R	Av.	R		
Student's engagement in studying (Handelsman et al., 2005)								
I will make sure to study regularly.	4.59	1	4.21	3	4.35	2	0.0004	***
I will find ways to make the course interesting to me.	4.44	1	4.19	3	4.30	2	0.0467	**
I desire to learn the material.	4.71	1	4.64	2	4.63	3	0.6615	
I will have fun in class.	4.66	1	4.64	2	4.50	3	0.2540	
Efficient use of e-learning platform (Chu and Chen, 2016)								
I have the knowledge necessary to use the digital learning system.	4.36	1	4.22	2	4.20	3	0.3673	
I have control over the digital learning system.	4.00	1	3.92	2	3.90	3	0.7555	
I have the resources necessary to use the digital learning system.	4.19	2	4.14	3	4.30	1	0.4986	
Perception and attitude towards e-learning (Chu and Chen, 2016)								
I feel positive about digital learning.	4.48	1	3.72	3	4.20	2	0.0000	***
Studying via digital learning is a good idea.	4.51	1	3.74	3	4.17	2	0.0000	***
Studying via digital learning is a wise idea.	4.46	1	3.73	3	4.17	2	0.0000	***
All things considered, using the digital learning system is beneficial to me.	4.46	1	3.83	3	4.13	2	0.0001	***
I believe that I will improve my digital business competences through e-learning.	4.35	1	3.88	2	3.80	3	0.0013	***
Digital readiness (first four items adapted from Hong and Kim, 2018; items five to seven adapted from ACS, 2020; Zupan, 2016; DESI, 2022)								
I can generate keywords to search for information for academic work.	4.29	1	3.97	3	4.28	2	0.0141	**
I can interact with classmates using real-time communication tools (e.g., video conferencing tools or messengers).	4.45	1	4.32	3	4.42	2	0.5276	
I can share my files with classmates using online software.	4.14	2	4.13	3	4.40	1	0.1244	
I can collaborate with classmates using online software.	4.15	3	4.21	2	4.35	1	0.2866	
I have mastered at least one online survey tool.	3.73	3	4.12	1	3.82	2	0.0421	**
I understand how to use social networks (e.g., FB, Instagram, LinkedIn) for business purposes.	4.19	3	4.19	2	4.43	1	0.1325	
I know how to use web design tools and create a simple website or blog (e.g., WordPress).	2.86	3	3.23	2	3.50	1	0.0094	***
Skill development (adapted from ACS, 2020; Zupan, 2016; DESI, 2022)								
I regularly improve my digital skills.	4.01	2	3.74	3	4.07	1	0.0598	*
I am aware of the shortcomings in my digital technology skills, and I am trying to diminish them.	4.15	2	4.01	3	4.17	1	0.3962	
I am well acquainted with and understand the opportunities of data-intensive technologies (e.g., artificial intelligence, analytics, big data, etc.)	3.42	2	3.42	3	3.88	1	0.0059	***
Digital infrastructure (adapted from ACS, 2020; Zupan, 2016; DESI, 2022)								
I know that some services are available to me as a citizen online (e.g., e-government, e-taxes, e-banking, e-health).	4.59	1	4.17	3	4.58	2	0.0001	***
In Slovenia, we have a good digital infrastructure, the possibility of connecting to the Internet, and modern equipment.	4.00	1	3.82	3	3.98	2	0.3722	
In Slovenia, we have digitally qualified teachers and developed digital learning platforms.	3.72	1	3.58	3	3.72	2	0.5138	

Note: Av. Stands for average, R for rank, Sig. for significance, and P-value stands for P-value between the three groups (One-way ANOVA), Higher vocational school students are all part-time students.

* p<0.1
** p<0.05
***p<0.001

As seen from Table 5, students' engagement in studying is analysed. The results show significant differences between the three groups of students. Students at the higher vocational school (all part-time) are the most engaged in their studies, followed by the part-time faculty students, whereas full-time students are the least engaged in their studies. The results suggest that external factors such as employment in general, but more specifically professional status, their professional situation, the possibility of an increase in salary and promotion due to higher education level, and awareness of the lack of one's own digital skills and the need to make up for the gap in those digital skills to successfully master work tasks, could trigger students' internal motivation. Moreover, students in higher-level vocational schools are the most motivated in their studies, because they want to compensate for their skills gap, which they are aware of.

Namely, looking at the measurements of digital readiness, the part-time students at the higher vocational school feel more competent to master simple digital tools (an e-learning platform). On the other hand, part-time faculty students feel more competent to master advanced digital tools (collaboration tools, online survey tools, social networking tools, web design tools), as well as to improve their digital skills at a faster pace and on a more regular basis. This can be explained by the fact that these students are likely to use digital tools in their work on a regular basis. As far as the assessment of skill development is concerned, full-time students are least likely to regularly improve their computer skills, which again highlights that they might not be aware of their digital skills gap. This is further emphasised by their assessment of the digital infrastructure, which also shows that they are the least aware of digital services and data-driven opportunities. This may be because the general acknowledgement of the younger generation's digital readiness is either denied or likely limited to social media and chatting apps rather than the more task- and learning-oriented implications of digitalisation opportunities. Regarding the self-reported assessment of the efficient use of the e-learning platform, there were no significant differences revealed.

Digital readiness and students' engagement in e-learning

Linear regression is performed on the following constructs (following the variables from Tables 4 and 5). The values of the constructs as independent variables of the regression model were calculated using the summed scales method. The following constructs were used: (Y) student's engagement in studying (dependent variable); (X1) efficient use of an e-learning platform; (X2) perception and attitude towards e-learning; (X3) digital readiness; (X4) skill development; and (X5) digital infrastructure. The steps and results of the regression analysis are displayed in Table 6.

Table 6: Regression analysis

Regression Statistics	
Multiple R	0.5091
R Square	0.2592
Adjusted R Square	0.2456
Standard Error	0.3619
Observations	223

ANOVA					
	df	**SS**	**MS**	**F**	**Significance F**
Regression	4	9.9952	2.4988	19.0732	0.0000
Residual	218	28.5603	0.1310		
Total	**222**	**38.5555**			

	Coefficients	**Standard Error**	**t-value**	**p-value**	**Lower 95%**	**Upper 95%**	**Lower 95.0%**	**Upper 95.0%**
Intercept	2.8383	0.1937	14.655	0.0000	2.4566	3.2200	2.4566	3.2200
X1	0.0710	0.0397	1.7877	0.0752	-0.0073	0.1493	-0.0073	0.1493
X2	0.0861	0.0331	2.6050	0.0098	0.0210	0.1512	0.0210	0.1512
X4	0.1020	0.0460	2.2187	0.0275	0.0114	0.1926	0.0114	0.1926
X5	0.1528	0.0515	2.9673	0.0033	0.0513	0.2543	0.0513	0.2543

Thus, the regression model provided in equation (1) shows that study engagement is primarily determined by the efficient use of the e-learning platform (X1) and positive perception and attitude (X2) towards e-learning challenges and opportunities, as well as self-reported skill development (X4) and digital infrastructure assessment (X5).

(1)

$$\begin{aligned} Student's\ Engagement \\ = 2.84 + 0.07 * Efficient\ use\ of\ OL\ platform \\ + 0.09 * Peception\ and\ attitude\ to\ OL + 0.10 \\ * Skill\ development + 0.15 \\ * Digital\ infrastructure \end{aligned}$$

When we looked at the individual items of the significant constructs, we found that none of the three items of the (X1) efficient use of the e-learning

platform has a significant positive linear relationship with the construct, but the mean construct does. Out of the five items of the construct (X2), perception and attitude, the item "I believe I will improve my digital business competences through e-learning" exhibits a significant positive linear relationship when examined independently, where "studying with digital learning is a good idea" is close to being significant. Out of the three statements for the X4 skill development construct, only the statement "I regularly improve my digital skills" seems to show a significant positive linear relationship when examined independently, whereas for (X5), an awareness of the availability of e-services for citizens, trust in digitally qualified teachers, and developing digital learning platforms show a significant positive linear relationship with engagement.

The construct of (X3), digital readiness, with its seven items, does not exhibit a significant linear relationship with (Y), student's engagement. However, when examining the individual items of this construct, we found out that the lowest level of digital skills, such as the ability to "create keywords to find relevant information needed for study activities," does exhibit a positive and significant linear relationship with students' engagement. Besides, the skills "how to collaborate with classmates using online software" and "how to share files with classmates using online software" also represent a lower level of digital skills, and digital literacy skills are close to being significant.

ANALYSIS

Based on the quantitative analysis, we can support hypothesis H1, which assumes that there is a variation in digital skills and digital readiness for different groups of students. Furthermore, hypothesis H2, which states that part-time students base their study engagement on a different level of digital competence than full-time students, is also supported. Hypothesis H3, which assumes that digital competence and digital readiness have a positive impact on study engagement, is only partially supported. More extensive interpretations of the results are provided below.

Student engagement in studying

Part-time students are more involved in their studies than full-time students. The possible explanations for this result include the fact that external motivators (such as job promotion, salary increase, improved professional situation and status, and awareness of a lack of skills to master complex digital tools) could trigger internal motivators in the group of higher vocational students who are eager to close the skills gap. Full-time students, on the other hand, who are on average, younger digital natives with no prior work experience, do not appear to recognise or be aware of the types of digital skills required in professional work situations. For this reason, they are less critical of their own level of digital skill mastery and appear to be more confident in mastering complex digital tools, according to self-perceived

measurement. As a result, the differences in actual levels of digital skills may be lower than reported. Nonetheless, differences exist and may be explained by employment status, tenure, age, type of study programme, the achieved level of education after graduation, as well as differences in their anticipated salary increase and general professional situation following graduation. With this, we address the research gap identified by Wild and Schulze Heuling (2020), who suggest that further research into the relationship between digital literacy and engagement, as well as the relationship between digital literacy and learning outcomes, is needed.

Efficient use of the e-learning platform

There are no differences in the self-reported level of the necessary skills to use the e-learning platform efficiently. One interpretation is that e-learning was our reality during Covid times, and students have since acquired the necessary skills to effectively use the learning platforms.

Perception and attitude towards e-learning

Part-time students at the higher vocational school have a far more positive attitude towards e-learning than part-time and full-time faculty students. Part-time students may have a more positive attitude towards e-learning due to the need for greater flexibility in learning hours and more developed independent learning competences. It is very likely that higher vocational school students who chose to enrol in the fully online programme in the first place are more supportive of e-learning than part-time faculty students who attend programmes that are either blended (in person and online) or fully online. Besides, students in higher vocational schools, which have a longer history of e-learning, receive introductory training to prepare them for e-learning. As a result, these students are better at developing their own expectations when they enrol.

Digital readiness and skill development

Part-time faculty students believe they are more capable of mastering advanced digital tools (collaboration tools, online survey tools, social networks, and web page design tools) than part-time vocational students. The fact that students from the higher vocational school are, on average, older, have longer tenure, and have richer work experiences than the younger part-time faculty students may help to explain the differences in skill levels. As a result, they may be far more critical of their own digital skill level. Professional experience has obviously contributed to their awareness of the digital skills gap.

The results also show that part-time faculty students and higher vocational school students improve their digital skills at a faster and more consistent rate than full-time faculty students, presumably due to the job-related application of competences. As previously stated, work experience obviously contributes to the awareness of deficiencies in digital skills, which

is required for closing the skills gap. Professional experience and age appear to contribute to more developed independent learning competences.

Furthermore, this implies that we are, in fact, investigating various target groups. In addition to Wild and Schulze Heuling (2020), who previously supported the idea that different study programmes and entrance qualifications attract different target groups, we show that there is a difference in the level of digital skills regardless of the entrance qualifications. However, it should be noted that, while the entrance requirements are the same, there is a difference in the type of programme, because students at the higher vocational school receive a lower formal level of education after graduation than faculty students. These students, presumably, will have different professional prospects and aspirations after they graduate and enter the labour force.

Assessment of digital infrastructure

Part-time faculty and higher vocational school students are much more aware of the various e-tools available to citizens, such as e-government, e-taxes, e-banking, and e-health, than full-time faculty students. Since the relationship between digital infrastructure assessment and engagement is positive, we can claim that trust in the quality of digital infrastructure and trust in the teacher's qualifications enhance students' study engagement.

DISCUSSION

In the discussion, we have provided some additional ideas for interpreting the findings of the various groups observed in this study. First, we outline the differences between full-time and part-time faculty students, before continuing with a comparison of the two groups: the faculty and the higher vocational school part-time students. We conclude by comparing all three groups: faculty full-time students, faculty part-time students, and higher vocational part-time students. Finally, we discuss some future research prospects and the implications of the study.

The full-time faculty students compared to the part-time faculty students

Part-time students are more engaged and do more to make their studies interesting than full-time students. It is more important for full-time students that studying is also enjoyable. Both groups have roughly the same level of proficiency in using the e-learning platform. Part-time students self-reported significantly more positive perceptions and attitudes towards e-learning (according to all criteria, except the belief that "e-learning helps them to improve their digital competences" which is similar for both groups; mean value 3.8), implying that part-time students value the benefits of e-learning much more. Part-time students self-reported a higher level of digital readiness than full-time students in general, apart from when using survey

tools, where full-time students performed better. Part-time students, in particular, are significantly better at creating the keywords needed to find relevant information for their studies. Furthermore, part-time students have a higher self-assessment of their skill development, are more aware of their skills gaps, and appear to improve their digital skills more frequently than full-time students. Furthermore, these students are significantly more aware of the various digital tools available.

The part-time students at the faculty compared to the part-time students at the higher vocational school

In terms of student engagement, part-time students at the vocational school are more engaged in their studies than part-time students at the faculty, according to all criteria. Part-time students at the higher vocational school also self-report a slightly more developed ability to use the e-learning platform competently. Furthermore, part-time students from the higher vocational school self-reported significantly more positive perceptions and attitudes towards e-learning across all criteria, implying that they value the benefits of e-learning far more than their part-time counterparts from the faculty. There is a significant difference in their beliefs that they can improve their digital competences through e-learning (mean values 4.35 and 3.80, respectively). In terms of digital readiness, there is a close similarity to basic digital skills such as keyword usage and mastery of basic digital communication tools. Part-time faculty students, on the other hand, believe they are better prepared to master a variety of complex digital tools (survey tools, collaboration tools, social networks, and creating a simple website). These students' assessments of their own skill development are very similar. However, part-time students at the higher vocational school (mean values 3.42 and 3.88) appear to be more aware of the importance of data-intensive technologies.

The higher vocational students compared to the part-time faculty students and the full-time faculty students

Students at the higher vocational school are the most engaged in their studies, followed by part-time and full-time faculty students. They also have a more positive perception of the benefits and outcomes of e-learning. They believe they are more capable of mastering simple digital tools (e-learning platforms) than advanced digital tools (collaboration tools, online survey tools, social networks, and web page design tools). Part-time faculty students feel more competent to master advanced online tools than full-time students and students from the higher vocational school and improve their digital skills at a faster and more regular rate. Full-time faculty students are less interested and engaged than part-time students, particularly students from the higher vocational school. They have a lower likelihood of improving their digital skills and are less likely to have a positive attitude and perceive the benefits of e-learning in general.

Limitations

The reliance on self-reported measures and the non-representative sample are two significant limitations of this study.

IMPLICATIONS AND FURTHER RESEARCH

This study supports the idea that there is variation in digital skills and digital readiness for different groups of students and that part-time students base their study engagement on a different level of digital competence than full-time students. Additionally, it also partially supports the positive impact of digital competences and digital readiness on study engagement. The findings of this study suggest that digital skills differ depending on the study programme and form, which has previously been supported in different settings by Wild and Schulze Heuling (2020) and Krelova et al. (2021). However, we believe that differences in digital skill levels exist in our setting, regardless of entry requirements. Furthermore, we believe that engagement is inextricably linked to the level of digital skills as well as the study programme and the various student target groups. Based on the findings, it appears that student engagement is related to their employment status. More research in different settings to back up this finding would be useful. The finding by Dewan et al. (2019) that various types of e-learning activities have various effects on student engagement should be further developed in future research on engagement. Furthermore, it is important to investigate the relationships between the variables using alternative techniques, such as logistic regression, where the dependent variable would comprise both full-time and part-time students as well as students attending higher vocational schools and faculty. It would be reasonable to look for other types of relationships, such as the curvilinear or u-shaped relationship between the constructs, given that the hypothesis that digital readiness has a positive impact on study engagement is only partially supported.

In addition, we argue in this existing study that younger digital natives with no prior work experience do not recognise or are unaware of the type of digital skills required in professional work situations. As a result, this aspect should be investigated further to determine whether the younger generation of digital natives is not only less aware of their skills gap, but also less critical of their level of mastery of digital skills and thus appears more confident to master complex digital tools based on self-perceived measurement. Could future research back up our claim that greater awareness of one's own digital skills gap leads to a faster and further development of skills on a more regular basis, as well as increased engagement in skill development?

We believe that rather than simply considering younger generations to be more naturally digitally skilled, the specific target group, as well as the purpose and type of digital skills, should be considered. As a result, specific profiles of digital competence must be measured in the future to show which specific types of digital skills younger generations and students without prior

work experience master better than older and employed students, and vice versa.

In practice, our findings could be used to plan future study programmes and learning activities, especially when it comes to deciding when and how to include digital skills in the curriculum.

REFERENCES

Blanchflower, D. G., Oswald, A. J. (2004). Well-being over time in Britain and the USA. Journal of Public Economics. Journal of Public Economics, 88(7–8), 1359–1386.

Blanchflower, D. G., Oswald, A. J. (2005). Happiness and the Human Deve-lopment Index: The Paradox of Australia. The Australian Economic Review, 38(3), 307–318.

Cantril, H. (1965). The pattern of human concerns. New Brunswick: Rutgers University Press.

Abbad, M. M., Morris, D., & de Nahlik, C. (2009). Looking under the bonnet: Factors affecting student adoption of e-learning systems in Jordan. International Review of Research in Open and Distance Learning, 10(2), 1–25. https://doi.org/10.19173/irrodl.v10i2.596

ACS (2020). E-vprašalnik za vrednotenje digitalne kompetence. https://arhiv.acs.si/rezultati_projektov/SPISDVNPZ_2016-2022/E-vprasalnik_za_vrednotenje_digitalne_kompetence.pdf

Arkorful, V., & Abaidoo, N. (2015). The role of e-learning, advantages, and disadvantages of its adoption in higher education. International Journal of Instructional Technology and Distance Learning, 12(1), 29–42.

Bates, T. (2019). Teaching in a digital age. Tony Bates Associates Ltd.

Bizami, N. A., Tasir, Z., & Kew, S. N. (2022). Innovative pedagogical principles and technological tools capabilities for immersive blended learning: a systematic literature review. Education and Information Technologies, 1–53. https://link.springer.com/article/10.1007/s10639-022-11243-w

Bredow, C. A., Roehling, P. V., Knorp, A. J., & Sweet, A. M. (2021). To flip or not to flip? A meta-analysis of the efficacy of flipped learning in higher education. Review of Educational Research, 91(6), 878–918.

Bryson, J. R., & Andres, L. (2020). Covid-19 and rapid adoption and improvisation of online teaching: curating resources for extensive versus intensive e-learning experiences. Journal of Geography in Higher Education, 44(4), 608–623.

Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st-century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). European Journal of Education, 54(3), 356–369.

Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. Research in higher education, 47(1), 1–32.

Carretero, S., Vuorikari, R., & Punie, Y. (2017). The digital competence framework for citizens. Publications Office of the European Union.

Castillo-Merino, D., & Serradell-López, E. (2014). An analysis of the determinants of students' performance in e-learning. Computers in Human Behavior, 30, 476–484. https://doi.org/10.1016/j.chb.2013.06.020

Castro, R. (2019). Blended learning in higher education: Trends and capabilities. Education and Information Technologies, 24(4), 2523–2546.

Christensen, C. M., Horn, M. B., & Staker, H. (2013). Is K-12 Blended Learning Disruptive? An Introduction to the Theory of Hybrids. Clayton Christensen Institute for Disruptive Innovation. https://eric.ed.gov/?id=ed566878

Chu, T. H., & Chen, Y. Y. (2016). With good, we become good: Understanding e-learning adoption by theory of planned behavior and group influences. Computers & Education, 92-93, 37–52. https://doi.org/10.1016/j.compedu.2015.09.013

Cidral, W. A., Oliveira, T., Di Felice, M., & Aparicio, M. (2018). E-learning success determinants: Brazilian empirical study. Computers & Education, 122, 273–290. https://doi.org/10.1016/j.compedu.2017.12.001

Coates, H. (2006). Student engagement in campus-based and online education: University connections. New York: Routledge. https://doi.org/10.4324/9780203969465
Coherent curriculum, Edglossary (n.d.). https://www.edglossary.org/coherent-curriculum/
Cook, D. A., & Steinert, Y. (2013). Online learning for faculty development: A review of the literature. Medical teacher, 35(11), 930–937.
Dakhi, O., Jama, J., & Irfan, D. (2020). Blended learning: a 21st century learning model at college. International Journal of Multi Science, 1(08), 50–65. https://multisciencejournal.com/index.php/ijm/article/view/92
Delcker, J. (2022). Digitalisation in the curricula of vocational schools: text mining as an instrument of curricula analysis. Technology, Knowledge and Learning, 1–16.
Deng, L., & Tavares, N. J. (2013). From Moodle to Facebook: Exploring students' motivation and experiences in online communities. Computers & Education, 68, 167–176.
DESI (2022). The digital economy and society index. https://digital-strategy.ec.europa.eu/en/policies/desi
Dewan, M., Murshed, M., & Lin, F. (2019). Engagement detection in e-learning: a review. Smart Learning Environments, 6(1), 1–20.
Gaebel, M., Zhang, T., Stoeber, H. and Morrisroe, A. (2021). Digitally enhanced learning and teaching in European higher education institutions (DIGIHE).
European qualification framework (EOK). (n. d.). European qualification framework.
Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). The utilisation of e-learning facilities in the educational delivery system of Nigeria: A study of M-University. International Journal of Educational Technology in Higher Education, 15(34), https://doi.org/10.1186/s41239-018-0116-z
Findeisen, S., & Wild, S. (2022). General digital competences of beginning trainees in commercial vocational education and training. Empirical Research in Vocational Education and Training, 14(1), 1–21.
Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. Review of Educational Research, 74(1), 59–109. https://doi.org/10.3102/00346543074001059
Fry, K. (2001). E-learning markets and providers: Some issues and prospects. Education + Training, 43(4/5), 233–239. https://doi.org/10.1108/EUM0000000005484
Goh, F. C., Leong, M. C., Kasmin, K., Hii, K. P., & Tan, K. O. (2017). Students' experiences, learning outcomes and satisfaction in e-learning. Journal of E-learning and Knowledge Society, 13(2), 117–128. https://doi.org/10.20368/1971-8829/1298
Goodyear, P. (2020). Design and co-configuration for hybrid learning: Theorising the practices of learning space design. British Journal of Educational Technology, 51(4), 1045-1060. https://bera-journals.onlinelibrary.wiley.com/doi/abs/10.1111/bjet.12925
Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. Early Childhood Research Quarterly, 21(4), 431–454
Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. The Journal of Educational Research, 98(3), 184–192. https://doi.org/10.3200/JOER.98.3.184-192
Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning: A review. Computers & Education, 90, 36–53. https://doi.org/10.1016/j.compedu.2015.09.005
Hodge, B., Wright, B., & Bennett, P. (2017). The role of grit in determining engagement and academic outcomes for university students. Research in Higher Education, 59(4), 448–460. https://doi.org/10.1007/s11162-017-9474-y
Hong, A. J., & Kim, H. J. (2018). College Students' Digital Readiness for Academic Engagement (DRAE) Scale: Scale development and validation. Asia-Pacific Education Researcher, 27(4), 303–312. https://doi.org/10.1007/s40299-018-0387-0
Hrastinski, S. (2019). What do we mean by blended learning?. TechTrends, 63(5), 564–569. https://link.springer.com/article/10.1007/s11528-019-00375-5
Huda, M. (2022), "Towards digital access during pandemic age: better learning service or adaptation struggling?". Foresight, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/FS-09-2021-0184

Islam, A. K. M. N. (2013). Investigating e-learning system usage outcomes in the university context. Computers & Education, 69, 387–399. https://doi.org/10.1016/j.compedu.2013.07.037

Ituma, A. (2011). An evaluation of students' perceptions and engagement with e-learning components in a campus-based university. Active Learning in Higher Education, 12(1), 57–68. https://doi.org/10.1177/1469787410387722

Jones, C. (2012). Networked learning, stepping beyond the Net Generation and digital natives. In L. Dirckinck-Holmfeld, V. Hodgson, & D. McConnell (Eds.), Exploring the theory, pedagogy, and practice of networked learning (pp. 27–41). New York, NY: Springer.

Jošt Lešer, V., & Berginc, D. 2023. Analysis of MBA skills from the employers' perspective: A case study. Advances in Business-Related Scientific Research Journal, 14(1), 45–57.

Kim, H., Hong, A., & Song, H. D. (2018). The relationships of family, perceived digital competence and attitude and learning agility in sustainable student engagement in higher education. Sustainability, 10(12), 4635.

Kiviniemi, M. T. (2014). Effects of a blended learning approach on student outcomes in a graduate-level public health course. BMC Medical Education, 14(1), 1–7. https://doi.org/10.1186/1472-6920-14–47

Krelová, K. K., Berková, K., Krpálek, P., & Kubisová, A. (2021). Attitudes of Czech College Students Toward Digital Literacy and Their Technical Aids in Times of COVID-19. Int. J. Eng. Pedagogy, 11(4), 130–147.

Lee, J., Song, H. D., & Hong, A. J. (2019). Exploring factors, and indicators for measuring students' sustainable engagement in e-learning. Sustainability, 11(4), 985.

Lockee, B. B. (2021). Online education in the post-COVID era. Nature Electronics, 4(1), 5–6.

López-Pérez, M. V., Pérez-López, M. C., & Rodríguez-Ariza, L. (2011). Blended learning in higher education: Students' perceptions and their relation to outcomes. Computers & Education, 56(3), 818–826.

Lucas, M., Bem-haja, P., Santos, S., Figueiredo, H., Ferreira Dias, M., & Amorim, M. (2022). Digital proficiency: Sorting real gaps from myths among higher education students. British Journal of Educational Technology, 53(6), 1885–1914.

Lyons, T., & Evans, M. M. (2013). Blended learning to increase student satisfaction: An exploratory study. Internet Reference Services Quarterly, 18(1), 43–53. https://doi.org/10.1080/10875301.2013.800626

Margaryan, A., Littlejohn, A., & Vojt, G. (2011). Are digital natives a myth or reality? University students' use of digital technologies. Computers & Education, 56(2), 429–440. https://doi.org/10.1016/j.compedu.2010.09.004

Martzoukou, K., Fulton, C., Kostagiolas, P., & Lavranos, C. (2020). A study of higher education students' self-perceived digital competences for learning and everyday life online participation. Journal of documentation, 76(6), 1413-1458.

Means, B., Toyama, Y., Murphy, R., & Bakia, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. Teachers College Record, 115(3), 1–47.

Mehdinezhad, V. (2011). First-year students' engagement at the university. International Online Journal of Educational Sciences, 3(1), 47–66.

Mseleku, Z. (2020). A literature review of E-learning and E-teaching in the era of Covid-19 pandemic. International Journal of Innovative Science and Research Technology, 57(52), 588-597.

Naveed, Q. N., Muhammed, A., Sanober, S., Qureshi, M. R. N., & Shah, A. (2017). Barriers effecting successful implementation of e-learning in Saudi Arabian universities. International Journal of Emerging Technologies in Learning, 12(6), 94–107.

Núñez-Canal, M., de Obesso, M. D. L. M., & Pérez-Rivero, C. A. (2022). New challenges in higher education: A study of the digital competence of educators in Covid times. Technological Forecasting and Social Change, 174, 121270.

Oke, A., & Fernandes, F. A. P. (2020). Innovations in teaching and learning: Exploring the perceptions of the education sector on the 4th industrial revolution (4IR). Journal of Open Innovation: Technology, Market, and Complexity, 6(2), 31.

Olelewe, C. J., & Agomuo, E. E. (2016). Effects of B-learning and F2F learning environments on students' achievement in QBASIC programming. Computers & Education, 103, 76–86. https://doi.org/10.1016/j.compedu.2016.09.012

Orton-Johnson, K. (2009). "I've stuck to the path I'm afraid": Exploring student non-use of blended learning. British Journal of Educational Technology, 40(5), 837–847. https://doi.org/10.1111/j.1467-8535.2008.00860.x

Parkes, M., Stein, S., & Reading, C. (2015). Student preparedness for university e-learning environments. The Internet and Higher Education, 25, 1–10. https://doi.org/10.1016/j.iheduc.2014.10.002

Pham, L., Limbu, Y. B., Bui, T. K., Nguyen, H. T., & Pham, H. T. (2019). Does e-learning service quality influence e-learning student satisfaction and loyalty? Evidence from Vietnam. International Journal of Educational Technology in Higher Education, 16(7), 1–26. https://doi.org/10.1186/s41239-019-0136-3

Pozo Sanchez, S., López-Belmonte, J., Moreno-Guerrero, A. J., Sola Reche, J. M., & Fuentes Cabrera, A. (2020). Effect of bring-your-own-device program on flipped learning in higher education students. Sustainability, 12(9), 3729.

Ratten, V. (2020). Coronavirus (Covid-19) and the entrepreneurship education community. Journal of Enterprising Communities: People and Places in the Global Economy, 14(5), 753–764.

Roffe, I. (2002). E-learning: Engagement, enhancement, and execution. Quality Assurance in Education, 10(1), 40–50. https://doi.org/10.1108/09684880210416102

Saadé, R. G., Morin, D., & Thomas, J. D. E. (2012). Critical thinking in e-learning environments. Computers in Human Behavior, 28(5), 1608–1617. https://doi.org/10.1016/j.chb.2012.03.025

Shanta, S. A. (2021). Student performance evaluation between offline and online pedagogy: A critical analysis with possible suggestions. Journal of Management Info, 8(4), 231–252. https://readersinsight.net/jmi/article/view/2080

Slovenian qualification framework (SOK) (n.d.). Slovenian qualification framework. https://www.gov.si/teme/stopnje-in-ravni-visokosolske-izobrazbe/

Singh, A., Jha, S., Srivastava, D.K. and Somarajan, A. (2022), "Future of work: a systematic literature review and evolution of themes". Foresight, 24(1), 99–125. https://doi.org/10.1108/FS-09-2020-003

Singh, J., Steele, K., & Singh, L. (2021). Combining the best of online and face-to-face learning: Hybrid and blended learning approach for COVID-19, post vaccine, & post-pandemic world. Journal of Educational Technology Systems, 50(2), 140–171.

Staker, H., & Horn, M. B. (2012). Classifying K-12 blended learning. Innosight Institute. http://192.248.16.117:8080/research/handle/70130/5105

Tomas, L., Evans, N. S., Doyle, T., & Skamp, K. (2019). Are first year students ready for a flipped classroom? A case for a flipped learning continuum. International Journal of Educational Technology in Higher Education, 16(1), 1–22.

Vadnjal, J. (2017). Video-lectures: an effective complementary teaching method at business college. Serbian Journal of Management, 12(1), 107–120.

Wild, S., & Schulze Heuling, L. (2020). How do the digital competences of students in vocational schools differ from those of students in cooperative higher education institutions in Germany? Empirical Research in Vocational Education and Training, 12(1), 1–18.

Wilson, K. (2020). What does it mean to do teaching? A qualitative study of resistance to Flipped Learning in a higher education context. Teaching in Higher Education, 1–14.

Xiao, J., Sun-Lin, H. Z., Lin, T. H., Li, M., Pan, Z., & Cheng, H. C. (2020). What makes learners a good fit for hybrid learning? Learning competences as predictors of experience and satisfaction in hybrid learning space. British journal of educational technology, 51(4), 1203–1219.

Zupan, G. (2016). E-veščine in digitalna ekonomija. Statistični urad Republike Slovenije.