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IMPORTANCE OF DIGITAL SKILLS FOR COMPETITIVE LABOUR FORCE – CHALLENGES IN WORK-BASED LEARNING IN LATVIA

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Abstract. Digital skills are increasingly required in all fields of the national economy. This has become especially relevant in the today's fast changing social developments and the recent unexpected conditions of pandemia. It requires also flexibility and innovation capacity of all involved stakeholders. The relevance of digital skills have been analysed by survey of vocational education managers, employers and students involved in work-based learning. The evaluation scale used was between 1–10 to ensure a more detailed comparison and analysis using indicators of descriptive statistics and cross-tabulations. Conclusions among other indicate that digital skills for employees are seen almost of the same importance as the ability to co-operate and loyalty to the company, according to employer's opinion.

Keywords: digital skills, work-based learning, qualified employees, employers, educators.

JEL Classification: M12, L26, J24.

Introduction

Entrepreneurs are increasingly requiring qualified employees in order to be competitive in the production processes. That creates motivation for academic researchers to analyse the various factors influencing skills and attitudes needs. Among the relevant skills and attitudes digital skills are required in all fields of the national economy. Scientific research recognises that this has become especially important in today's fast changing social developments and even more so during the recent unexpected conditions of pandemia. As a result in many educational institutions remote studies had to be implemented where digital skills were essential and most required. It required also flexibility and innovation capacity of all involved stakeholders, including employers who participated in work-based learning provision. Research methods: analysis of scientific publications related to relevant skills and effective work-based provision, surveys of stakeholders involved in work-based learning: entrepreneurs (with 498 respondents), vocational education institution managers (with 28 respondents) and vocational education students (with 561 respondents). The survey included issues for the relevant evaluated by the three groups of stakeholders: for employers to determine what skills were important for new employees to be accepted at their companies; for vocational education school managers on the relevance of particular skills in the training process; for students to determine what skills are being seen as important in the training process. It was important to find out by the survey if all the stakeholders have similar opinions and what are the general tendencies in determination of the most important skills and attitudes for future employees in the companies. Consequently, also the relevance of digital skills has been analysed by survey of vocational education managers, entrepreneurs and vocational education students involved in work-based learning. The survey was distributed with personal invitation by Confederation of Employers of the Republic of Latvia. Several questions in the surveys for employers, vocational education school managers and vocational education students most of the questions were alike (for each of the group there were some specifics) in order to investigate the same processes and results from all stakeholders involved in work-based learning. All above mentioned stakeholders among important aspects asked to be evaluated in work-based learning there were asked also questions related to organisation and results of work-based learning including aspects of interest (motivation) to perform assigned duties, initiative and creativity, specific

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professional knowledge and skills, ability to plan working hours, ability to cooperate, reliability and loyalty to the company, willingness and ability to supplement their knowledge and skills in the professional field, general intelligence, language skills, digital skills and other aspects. The evaluation scale used for evaluations by respondents of all stakeholders (entrepreneurs, vocational schools managers and vocational education students) was between 1–10 to ensure a more detailed comparison and analysis using indicators of descriptive statistics: indicators of central tendency or location (arithmetic mean, mode, median), indicators of variability or dispersion (range, standard deviation, standard error of mean) and cross-tabulations. Survey data analysis was performed by software program SPSS.

1. Theoretical findings

Work-based learning is gaining more and more importance world-wide for training of competitive employees. Researchers have analysed various aspects of organisation of work-based learning, on the efficiency of the process, including the relevance of digital solutions, on the role of various stakeholders, on gains of the process and problems in organisation and implementation of work-based learning. Researchers have paid attention on exploration of domains and elements of integrated training competency model through work-based learning (Ciptono et al., 2021) where main aspects for effective organization of work-based learning is increased including requirements for digital skills becoming more and more important also in vocational education. Engaging with employers in work-based learning as a foundation degree in applied technology has also been pointed out as an important aspect (Benefer, 2007). Staff capacity building and also accountability are of great importance in transition services (Crane et al., 2021), also in relation to work-based learning. Teacher perceptions of barriers to providing work-based learning experiences (Rooney-Kron & Dymond, 2021) as well as needs for working internationally (Whitney, 2013) what is becoming more and more important in realisation of work-based learning provide practically applicable results for improved work-based learning. The impact of workplace spirituality on work-based learners: individual and organisational level perspectives have to be taken into account and used in the best possible way (Foster & Foster, 2019). Using a skills bank for work-based learning (Hatfield, 2007) is new and innovative approach for vocational education where importance of attitude towards tasks as well as good level of digital skills are noticed and stressed. Researchers have analysed also findings and practical usability of self-design project based learning, considered as an alternative and successful learning model for vocational education (Hamdani & Suherman, 2021) as well as the development of mapping tool for the work-based learning activities (Lemanski & Overton, 2016). Researchers have analysed how work-based learning influences and changes leadership on different levels (Raelin, 2011) identifying important factors for supporting leadership development. Reflection in a workplace qualification: challenges and benefits have been pointed out as important aspect in skills development through work-based learning as well (Hegarty et al., 2011) opening ways to innovation and application of digital skills (Lazaro-Mojica & Fernandez, 2021), on skills development using digital tools demanding certain level of digital skills (Webb, 2012). Researchers in their academic research since long have stated the question – can work-based learning programmes help companies to become learning organisations (Ions & Minton, 2012) as such companies are increasingly on demand. For work-based learning there is another key question – how to increase social capital of organizations, also identifying and analysing the role of informal learning behaviours (Joseph & Totawar, 2021) becoming more and more significant. Creatively expanding research results from work-based learning (Scott, 2020; Walsh, 2007) has inspired future innovative steps and made practical explanations in understanding work-based learning (Sossi, 2011; Wall et al., 2017a). Positive emotion in workplace impact analysis of the case of a work-based learning project utilising appreciative inquiry (Wall et al., 2017b) with innovative approaches for practical use and practical application. Researchers have suggested approaches for peer-led group supervision a model to support and inspire social work students to be 'active discoverers and constructors of their own knowledge' (Strang, 2021). Pedagogy of work-based learning and the importance of the role of the learning group (Siebert et al., 2009) with practical applicable approaches has been suggested. Work-based learning and continuing professional development are closely connected and frequently applied in vocational education where special attention is paid for employement possibilities for graduates (Sobiechowska & Maisch, 2007; Savage, 2005; Akkerman & Filius, 2011). Several countries have different experiences: researchers have found useful experience from the Netherlands on apprenticeship in connecting school and work-based learning (Onstenk & Blokhuis, 2007) with indicated several important aspects haven to be taken into consideration, researchers from Australia (Baker et al., 2017) made profound analysis on work-based learning as a learning strategy in support of the Australian Qualifications Framework and have considered real and practically usable suggestions. A researcher (Ha, 2022) has analysed the involvement of industry professionals and barriers to involvement in work-integrated learning in Vietnam where practical findings from this research could be used also in other counties. Practical and applicable findings are developed on implementation of online work-related safety and health trainings for students and educators during and after the COVID-19 pandemic which has developed several approaches, among them the New Jersey model being widely discussed in academic community (Shendell et al., 2021; Buffardi, 2021) with practical applicability also after the pandemia using well-developed digital sills and technologies useful for studies and training in all

stages of education including vocational education. Researchers have found confirmation of the importance of marketing (Batraga et al., 2019) as marketing very often play significant role for attracting stakeholders, finances (Romanova et al., 2018), since without efficient financial regulation work-based learning is not possible to realise, ergonomic aspects (Kalkis et al., 2020, 2021), the role of municipalities (Seimuskane et al., 2017; Savrina & Seimuskane, 2018) as in many cases municipalities have significant role for involving employers and vocation schools for work-based learning and social media: key tools for the future of work-based learning (Toole, 2011). Using work-based and work-applied learning to enhance the intellectual capital of organisations (Garnett et al., 2016; Guillermo et al., 2021) and reflection through web discussions and assessing students in work-based learning (Hulkari & Mahlamäki-Kultanen, 2008), in several fields level of digital skills could be required on different level (Goller, et al., 2021) as well as vocational education in unusual situation of pandemia has introduced and developed needs for digital skills development in realisation of work-based learning (Namjoshi et al., 2021) in several countries having several importance for several aspects of work-based learning (Esmond & Atkins, 2020) also different age groups students involved in vocational education (Evans, 2017) and with online teaching and learning situations analysis and indicated specifics (Cook & Pachler, 2012) pay attention to important essential contribution by all stakeholders involved in work-based learning, each of them having significant role (entrepreneurs, educators, vocational education students and also public administrators) in the implementation of this effective approach in the organisation of vocational education, for competitive labour market relevant skills' development.

2. Empirical research results

The surveys of different stakeholders involved in work-based learning (entrepreneurs, educators and vocational education students) were organised to obtain evaluations of the stakeholders regarding the same aspects – relevant for the skills' (including digital) development in work-based learning. Among different aspects influencing evaluations of needed skills and attitudes for employees, the entrepreneurs have evaluated the suggested aspects which were arising from theoretical studies. The main indicators of descriptive statistics on evaluations by employers are included in Table 1.

As data included in Table 1 indicate – as the most important skills the employers have considered interest (motivation) to perform assigned duties – with the highest arithmetic mean of the entrepreneur's evaluations and with the second smallest standard deviation; it means that views of entrepreneurs were alike, even taking into account that in this case all evaluation scale 1–10 was used by entrepreneurs, with the lowest evaluation by employers being 1 and highest being 10 for this analysed aspect. Next in importance by entrepreneurs evaluation

Table 1. Main indicators of descriptive statistics on entrepreneurs evaluation of student skills and attitudes important for future employee at the company (source: authors calculations based on entrepreneurs survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Evaluated aspect	N	Minimum	Maximum	Mean	Std. Deviation
Interest (motivation) to perform assigned duties	495	1	10	9,34	1,179
Initiative and creativity	491	3	10	8,79	1,342
Specific professional knowledge and skills	487	2	10	8,45	1,683
Ability to work independently	498	4	10	8,94	1,307
Ability to plan working hours	485	2	10	8,60	1,523
Ability to cooperate	492	3	10	8,97	1,320
Reliability and loyalty to the company	487	3	10	9,01	1,331
Language skills	488	1	10	7,22	2,336
Digital skills	484	1	10	7,44	2,155
Willingness and ability to supplement their knowledge and skills in the professional field	486	3	10	9,05	1,162
General intelligence	491	3	10	8,43	1,475
Other	104	1	10	5,99	3,910

for employees was willingness and ability to supplement their knowledge and skills in the professional field – in this case views of entrepreneurs had the smallest vairability of views and the lowest evaluation was 3. Next most important aspect evaluated by employers was reliability and loyalty to the company. Employers have evaluated as less important – language skills even taking into account disscussions in mass media and quite different views for language skills needs, taking into account requirement to obtal language skills in state language which in many cases are missing. Digital skills are becoming increasingly important by the views of all stakeholders but especially by entrepreneurs as it is mentioned in numerous scientific publications world-wide, but in evaluations of entrepreneurs in Latvia needs for digital skills for employees were evaluated not so high as it could be expected and noticed in scientific research by researchers in other countries, therefore evaluations of entrepreneurs for digital skills for employees has been evaluated in greater detail (see Table 2).

Data included in Table 2 indicate that most of employers for evaluation of importance for digital skills aspect gave evaluation 8 – characterised by mode, half of employers in this survey gave evaluation 8 or less and half of employers gave evaluation 8 or more – characterised by median even taking into account that all evaluation scale (1–10) was used for evaluations by entrepreneurs,

Table 2. Main indicators of descriptive statistics on entrepreneurs evaluation of student digital skills relevance as future employee at the company (source: authors calculations based on entrepreneurs survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Statistical indicators		Values of statistical indicator
N	Valid	484
	Missing	14
Mean		7,44
Standard Error of Mean		0,098
Median		8
Mode		8
Standard Deviation		2,155
Variance		4,645
Range		9
Minimum		1
Maximum		10

the arithmetic mean of the evaluations by entrepreneurs was 7,44; it means that even taking into account that evaluations by entrepreneurs on student digital skills importance were evaluated with high numbers but also in their evaluation a rather big share of entrepreneurs gave also low evaluations for this evaluated aspect. More detailed information on results in evaluations by entrepreneurs is included in Table 3.

Table 3. Distribution of evaluations by entrepreneurs on student digital skills importance as future employee at the company (source: authors calculations based on entrepreneurs survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Evaluation	Frequency	Percent	Valid Percent	Cumulative Percent
1	12	2,4	2,5	2,5
2	5	1,0	1,0	3,5
3	10	2,0	2,1	5,6
4	19	3,8	3,9	9,5
5	43	8,6	8,9	18,4
6	46	9,2	9,5	27,9
7	68	13,7	14,0	41,9
8	109	21,9	22,5	64,5
9	85	17,1	17,6	82,0
10	87	17,5	18,0	100,0
Total	484	97,2	100,0	
Missing	14	2,8		
Total	498	100,0		

Among the questions in the survey for entrepreneurs was also the question on possible needs for employees for the respective company. These results of answers by entrepreneurs are reflected in Table 4.

Data of Table 4 indicate that almost half of employers need new employees for their companies and this makes them more motivated for close co-operation with vocational education institutions, in order to improve quality in vocational education and education of their future employees, including the needs for digital skills (see Table 5).

Table 4. Distribution of entrepreneur's responses on needed employees for the company (source: authors calculations based on entrepreneurs survey)

Answer	Frequency	Percent	Valid Percent	Cumulative Percent
Not indicated	57	11,4	11,4	11,4
Yes	246	49,4	49,4	60,8
No	195	39,2	39,2	100,0
Total	498	100,0	100,0	

Table 5. Cross-tabulations of entrepreneurs evaluations by situation if they are lacking or not lacking employees – entrepreneurs on student digital skills importance as future employee at the company (source: authors calculations based on entrepreneurs survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Evaluation	Not indicated	Yes	No	Total
1	2	8	2	12
2	0	4	1	5
3	1	6	3	10
4	1	11	7	19
5	3	23	17	43
6	5	20	21	46
7	9	36	23	68
8	17	55	37	109
9	7	41	37	85
10	10	38	39	87
Total	55	242	187	484

Data included in Table 5 indicate that entrepreneurs have alike evaluations on digital skills needs for the vocational education students not depending from the situation – they need or do not need employees for their companies. The evaluations by entrepreneurs indicate that there are rather high needs for digital skills. Evaluations by students on their views are presented in Table 6.

As data included in Table 6 indicate – students as the most important have considered ability to co-operate – with the highest arithmetic mean of the students' evaluations and with the smallest standard deviation, it means that views of students were alike in their evaluations. Next in importance in the evaluations of vocational education students was the ability for independent work and personal interest to fulfil tasks, main indicators of students' evaluations are included in Table 7.

As data included in Table 7 indicate the most often chosen evaluation by vocational education students was 8 (characterised by mode), half of students gave

Table 6. Main indicators of descriptive statistics on student evaluation of student skills and attitudes – important as future employee at the company (source: authors calculations based on student survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Evaluated aspect	N	Min	Max	Mean	Std. Deviation
Personal interest to fulfil tasks	561	1	10	8,30	1,906
Initiative and creativity	556	1	10	7,79	1,754
Specific professional knowledge and skills	552	1	10	8,10	1,832
Ability for independent work	555	1	10	8,35	1,762
Ability to plan own time	553	1	10	8,24	1,798
Ability for co-operation	554	1	10	8,50	1,744
Loyalty to company	552	1	10	8,23	1,851
Language skills	554	1	10	7,64	1,853
Digital skills	553	1	10	7,66	1,744
Interest and ability to improve knowledge and skills	553	1	10	8,26	1,777
General knowledge on different society development	556	1	10	7,23	2,065
Other	233	1	10	7,35	2,664

Table 7. Main indicators of descriptive statistics on student evaluation of student digital skills importance as future employee at the company (source: authors calculations based on students survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Statistical indicators		Values of statistical indicator
N	Valid	553
	Missing	8
Mean		7,66
Standard Error of Mean		0,074
Median		8
Mode		8
Standard Deviation		1,744
Variance		3,041
Range		9
Minimum		1
Maximum		10

evaluations 8 or less and half of students gave evaluations 8 or more (characterised by median). The arithmetic mean of the evaluations for digital skills by students is higher than by employers. Main results of evaluations by vocational education school managers are included in Table 8.

Table 8. Main indicators of descriptive statistics on vocational education schools managers evaluation of student digital skills relevance as future employee at the company (source: authors calculations based on vocational education schools managers survey, evaluation scale 1–10, where 1 – not important; 10 – very important)

Statistical indicators		Values of statistical indicator
N	Valid	28
	Missing	0
Mean		8,14
Standard Error of Mean		0,256
Median		8
Mode		8
Standard Deviation		1,353
Variance		1,831
Range		5
Minimum		5
Maximum		10

As data included in Table 8 indicate the most often chosen evaluation by vocational education schools managers was 8 (characterised by mode), half of students gave evaluations 8 or less and half of students gave evaluations 8 or more (characterised by median). It means that vocational education manager's consider digital skills as important, especially since in the recent situation with pandemia many activities were conducted in remote way by use of digital tools. The lowest evaluation on importance of digital skills by vocational education managers was 5 which are the highest among all analysed stakeholders.

Conclusions

Work-based learning is becoming more and more important for educating competitive employees in many countries, and researchers are analysing various aspects influencing the implementation of work-based learning where digital skills are of increasing importance among other important aspects: interest (motivation) to perform assigned duties, followed by willingness and ability to update their knowledge and skills in the professional field, the ability for independent work, personal interest to fulfil tasks, loyalty to company, attitude to work, interest and ability to improve knowledge and skills.

According to employer's evaluation – the most important characteristics for their future employees are interest (motivation) to perform assigned duties, followed by willingness and ability to update their knowledge and skills in the professional field followed by reliability and loyalty to the company, followed by ability to cooperate.

Digital skills are gaining increasing importance alongside with the other relevant characteristics. At the same time their relevance was not sufficiently underlined by the survey respondents – in contrast to the survey authors' expectations. This poses additional questions and

suggests a need for further studies with the respective target groups and stakeholders. This may be especially relevant under the present pandemia and post-pandemia conditions suggesting a potential change of priorities regarding the needed skills for employees with a likely increase in the relevance of digital skills in vocational education and training and work-based learning.

The vocational education students as the most important characteristics have considered ability to co-operate, further on the ability for independent work and personal interest to fulfil tasks. The evaluations for digital skills by students were higher than by employers.

The highest average evaluations for digital skills in vocational education were given by vocational education schools managers. The obtained findings on the relevance of various skills for future competitive labour forces, especially regarding the role of digital skills under present conditions suggest the need for further studies on the topic.

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Author contributions

Ilze Buligina – conception and design of the work, analysis of scientific publications, development of draft of the survey questionnaire, organisation of acquisition of data from survey, participation in conclusions development. Biruta Sloka – revision of conception and design of the work, analysis of scientific publications, contribution in the development of the surveys questionnaires; analysis and interpretation of data; preparation of conclusions and recommendations, revising the article for relevant intellectual content.

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