## **INTERNAL INTERNAL JOURNAL OF** Engineering Pedagogy

iJEP | elSSN: 2192-4880 | Vol. 13 No. 2 (2023) | OPEN ACCESS

https://doi.org/10.3991/ijep.v13i2.34799

#### PAPER

# Professional Corporate Employee Education from the Point of View of the Types of Education and the Applied Forms of Education

Gabriela Gabrhelová<sup>1</sup>, Marta Matulčíková<sup>2</sup>, Eva Dolinská<sup>3</sup>, Silvia Barnová<sup>1</sup>(⊠), Daniela Breveníková<sup>4</sup>

<sup>1</sup>DTI University, Dubnica and Váhom, Slovakia

<sup>2</sup>University of Economics in Bratislava, Bratislava, Slovakia

<sup>3</sup>Faculty of Education, Catholic University in Ružomberok, Ružomberok, Slovakia

<sup>4</sup>retired academic, University of Economics in Bratislava, Bratislava, Slovakia

barnova@dti.sk

#### ABSTRACT

The purpose of this paper is to characterize the types and forms of continuing vocational education applied in selected Slovak companies and their benefits for employee performance. The basic concepts, i.e., compulsory and voluntary vocational training of employees, obligations of the employer and the employee related to these forms of education are defined in the paper in accordance with the law. Most of the mandatory trainings are intended for all employees of a given employer entity and concern occupational safety and health, first aid and fire protection, as well as trainings focused on regular verification and renewal of employees' skills. Voluntary educational activities are based on the interests and needs of employees. Questionnaire and interview methods were applied in the empirical research. The target number of respondents selected from two divisions of the statistical classification of economic activities in the Slovak Republic was 120. The research results presented in the tables show the types and forms of education/training applied in the analyzed companies, classified by the number of participants, duration and repetitiveness of the training. The research results confirm that mandatory training courses are organized in all the companies surveyed, while voluntary continuing education in these companies is most often conducted as a one-time educational activity of short duration.

#### **KEYWORDS**

adult education, form of education, kind of education, mandatory education, professional corporate employee education

## **1** INTRODUCTION

The development of information and communication technologies (ICT) as well as the challenges posed by the COVID-19 pandemic have led to new approaches and teaching methods in the academic sphere as well as in the business world [1], [2].

Gabrhelová, G., Matulčíková, M., Dolinská, E., Barnová, S., Breveníková, D. (2023). Professional Corporate Employee Education from the Point of View of the Types of Education and the Applied Forms of Education. *International Journal of Engineering Pedagogy (iJEP)*, 13(2), pp. 4–19. https://doi.org/10.3991/ijep.v13i2.34799

Article submitted 2022-08-28. Resubmitted 2022-11-28. Final acceptance 2022-11-28. Final version published as submitted by the authors.

© 2023 by the authors of this article. Published under CC-BY.

Continuing vocational training of employees is associated with the increasing demands on the performance of professional activities. It is a targeted training related to economic activities, the essence of which is to create and maintain an optimal harmony between subjective qualifications, i.e., the real working ability of an individual, on the one hand, and objective qualifications given by the requirements of a particular profession and the tasks of the job. We can describe this process as a permanent reconciliation between the workers' qualifications and the requirements of the job.

In general, continuing vocational education can be divided into two categories: normative education, i.e., compulsory education, which includes educational activities defined in the current legislation and which enables an individual to perform specific professional activities, and optional (complementary) education, which includes qualification and regulaification programs. Compulsory education is also used for periodic review and regular renewal of work-related skills. Mandatory education includes occupational health and safety (OHS) courses, fire-protection courses, and courses to develop job knowledge, skills and competencies [3].

The continued development of technology is impacting teaching and learning environments, including ongoing professional development in companies. Kanetaki et al. [4] discuss the issues surrounding hybrid learning environments. Hybrid learning environments represent a combination of a traditional learning environment and a virtual environment. Virtual learning environments (VLEs) are web-based educational systems that model real-world education and provide learners with virtual access to lessons, learning content, tests, assignments, grades, and assessments [5]. The VLE expands the space for corporate continuing education. It prepares an appropriate organizational framework for the implementation of education. Its important feature is that it can increase the attractiveness of education by its variability, by adjusting education to the needs of people interested in education, by flexible creation of target-training groups, by eliminating limitations of time and space, by learners' participation in education, their collaboration, etc. The issue of attractiveness in changing forms of education has been studied, for example, by Jacques and Lequeu [6].

The aim of this article is to characterize the types and forms of continuing vocational training applied in selected Slovak companies and their benefits for employees' performance.

The remainder of the document is organized as follows. Section 2 describes the on-the-job training of employees. The methodological aspects are presented in Section 3. The main results obtained are discussed in Section 4. Finally, the main conclusions and research perspectives are given in Section 5.

## 2 ON-THE-JOB TRAINING FOR EMPLOYEES

Adult education as education provided to the adult population includes all educational activities of regular school adult education (acquisition of a certain level of completed education), continuing adult education and senior education. Bursová [7] also talks about education that concerns working seniors.

Formal education also contains vocational education, which increases the qualifications of graduates and ends with a certificate of qualification. Adult education, as education provided to the adult population, includes all educational

activities of regular school adult education (acquisition of a certain level of completed education), continuing adult education and senior education. This article deals with the continuing education of the adult population, which takes place in specific companies in the form of continuing vocational training of employees.

## 2.1 Providing further corporate professional training from the aspect of legislation

An important part briefly described in this paper is mandatory education. Mandatory employee training concerns, in particular, the training activities which the employer is obliged to organize and the employees are obliged to participate in. This applies, in particular, to the mandatory training stemming from legislation. Most mandatory training designed for all employees of a particular employer entity relates to the fields of occupational safety and health, first aid, and fire protection, and is generally referred to as OHS/OH&S and Fire Protection training. Employees must take part in training upon entry into employment, and employees' re-training is carried out at a certain frequency. Occupational health and safety is regulated by the state by a set of laws - the Act No. 124/2006 Coll. on Occupational Safety and Health [8] – regulations of the Government of the Slovak Republic, and decrees of relevant ministries. It is the employer's duty to work out the organization's internal regulations, the method of conducting safety and health training at work, as well as the requirements in the field of employees' professional competencies. Likewise, the employer shall define the frequency of training in the organization's internal guidelines so that the training is organized at least every two years and is obliged to inform employees about occupational safety and health requirements at recruitment; when transferring to another workplace or assigning or re-assigning to another job; or when introducing new technologies, new workflow or new work equipment [8].

Mandatory education also includes training in the field of fire protection (FP). In accordance with the Article 20 of the Decree of the Ministry of the Interior No. 121/2002 Coll. on Fire Prevention as amended [9] and related regulations, trainings of employees shall be conducted prior to their entry in the employment and subsequently repeated every 24 months. It is essential that all employees participate in the trainings, including workers on contract of services and those on short-term contracts [9]. Similarly to OHS/OH&S trainings, also Fire Protection trainings are held either at the workplace or in the form of online education.

Mandatory education covers also other educational activities focused on regular verification and renewal of competencies. These activities concern various job positions and activities performed in these jobs – e.g., professional drivers, forklift operators, electricians, welders, etc. In accordance with the Act No. 280/2006 Coll. on Compulsory Initial Qualifications and Periodic Training of Certain Drivers as amended [10], the aim of regular professional drivers' trainings is to update the knowledge and practical skill needed for the performance of the driver's occupation with a focus on safety of road traffic and on cutting down the fuel consumption. Pursuant to the Act No. 124/2006 Coll. on Occupational Safety and Health [8], an obligation is imposed on the employer to entrust the work with the motor trolley only to employees who are holders of a valid motor trolley licence for the given class and type of trolley. There are also other types of mandatory training, but in this document, only those that we consider most relevant to the topic are mentioned. The aim of the forklift service training is to renew the knowledge of operating and motor trolleys, to supplement it with new legal regulations, to get acquainted with occupational accidents and conditions in the organization, to eliminate possible inappropriate habits, and to deepen knowledge about safe and economical operation of motor trolleys. The hygiene minimum for food industry workers is a certificate of the worker's competence in a particular segment [11]. The professional training of electricians is regulated by the Act No. 124/2006 Coll. on Occupational Safety and Health [8] and the Decree No. 508/2009 Coll. of the Ministry of Labour, Social Affairs and Family, laying down the details for occupational safety and health in working with pressure, lifting, electric and gas technical equipment and specifying technical equipment considered as classified technical equipment [12]. There are also other kinds of mandatory training, but in this paper, only the ones we consider the most relevant to the topic are mentioned.

#### 2.2 Voluntary continuing professional development for employees

Much more important are the voluntary educational activities conducted as part of the companies' continuing education, which are based on the interests and needs of individual employees. Educational activities can be divided into two categories: qualification training and re-qualification training.

Qualification training focuses on expansion, innovation, specialization and renewal of qualification. The types of education/training will be described in this context.

Further qualification education consists of:

- Adaptation training: The aim of adaptation training is to harmonize the existing professional, psychological, and social needs with the working conditions and the work environment at the earliest possible time. Adaptation training is part of the adaptation process and consists of work adaptation, organizational and cultural adaptation, as well as social and psychological adaptation. It is applied upon the entry of a new employee in an enterprise or when applying the methods of intra-enterprise employee mobility.
- **Initial training:** This is designed for performing the most simple work activities (using new techniques, technologies and the like).
- Special-purpose professional: This training is oriented on the development of individuals' qualifications based on the requirements for individual job positions and the requirements placed on employees described in the occupational register of the National System of Occupations. In special-purpose professional training, the focus is on upgrading, deepening and renewal of qualifications.

The development of key competences concerns competencies that are not directly related to professions. The term "key competencies" is used to refer to the competences that everyone needs in life, for personality development, employment, social integration, a sustainable lifestyle and a successful life in society, as well as for a responsible approach to health and active citizenship. In the context of lifelong learning, competencies for all levels of formal, nonformal and informal education have been developed. The framework establishes the following eight key competencies for lifelong learning: literacy; language competencies; scientific,

technological, technical and mathematical competencies; digital competencies; personal, social and learning competencies; civic competencies; entrepreneurial competencies; and competencies for cultural awareness and expression [13].

Specialized training aims to acquire specific knowledge and skills related to new technical and technological innovations and changing job content. This type of training is important from the point of view of the need to apply an interdisciplinary approach in the performance of a number of professional activities. Training activities are focused on increasing qualifications and specialization in the performance of work, including knowledge from other scientific fields.

Requalification training is associated with changes in the labor market. Many jobs are losing their attractiveness and importance due to digitalization. On the other hand, new job opportunities are created with new requirements for workers [14].

These job activities are performed by people who have been trained in the field or by employees who have worked in other jobs and need to be requalified. Requalification is a specific type of skills training. In company training, only a portion of the requalification training is conducted. Requalification training is mainly conducted in the formal education system [15].

#### 2.3 Forms of continuous professional training in companies

Various forms of education that are applied within further corporate professional training promote a target-oriented arrangement of the external aspects and conditions, under which the educational process is conducted. The development of digital technologies creates a broader space for the application of new forms of education. The increasing number of existing learning environment affects the selection of a particular educational module, i.e., traditional classroom learning/teaching, distance teaching with the application of a variety of digital technologies (e.g., e-mail, virtual education [face-to-face] via a video conference system), as well as using social media [16], [17].

When choosing an educational module, all aspects of available technologies, their benefits, options, accessibility, functions, price, and quality need to be considered, as well as the conditions of training (number of students, aim and content of the training, tasks related to the verification of learning results, need for communication) and educational infrastructure (availability of study materials and other arrangements for education).

In an educational environment, a wide range of forms of education can be applied. These forms need to be selected with regard to the fulfillment of the educational goals set forth and the needs of the target group. In the case of the forms of education, the organizational aspect of education should also be considered.

The applied forms of education can be categorized from various aspects, e.g., based on the number of participants, composition of the group, training venue, duration of training, repeatability, the methods of organizing the training activities by the provider and its participants (managed forms of education/training, individualized forms of training, collaborative and participative forms of training).

Today, these forms of education are applied in traditional physical environments, but also in the virtual environment, and it can be assumed that hybrid educational environments are gradually becoming the preferred ones. A combination of online and traditional training (blended learning) is defined as "Education that combines face-to-face education classroom methods with computer-mediated activities" [5]. An increased use of mobile devices in education has resulted in an emerging field of mobile learning (mLearning) [5].

Kanetaki et al. [16], [17] discussed the topic in the context of sustainable education, which is a valuable contribution to the study of the trends in contemporary online education. In [17], the authors present how they integrated their methodology into a sustainable educational academic process. Findings on online education during the COVID-19 pandemic published abroad could be applied also in the analysis and evaluation of online and hybrid learning in the corporate sector [18], [19].

## 3 METHODOLOGY

The implementation of individual forms of education in further corporate professional training is closely connected to organizational arrangements of education. The choice of a suitable form of education in further corporate training considerably influences the interest in being educated. Educational motivation affects the achievement of educational objectives set forth. These objectives are viewed as the outcomes of education and as something that the participants will be able to do after completing their training.

The research was carried out using the interview method and the questionnaire method. The interviews were carried out during the pilot research and in the preparation of the questionnaire. The questionnaire method was used for practical reasons, as the research required a representative sample of respondents. Using the questionnaire method makes it possible to gather information from a larger number of respondents within a reasonable period of time and at a reasonable cost.

Primary data were collected on the basis of questions from a questionnaire prepared in advance. The questionnaires were distributed in person or electronically. The questionnaire consisted of two parts: (1) the information part, containing demographic data, and (2) the professional part, focused on the respondents' opinions on the implementation of training in their companies and the general interest of employees in participating in training activities.

In the course of the research study, the opinions of employees working in the field of food production and catering services were examined. Random sampling was used to select the respondents. In accordance with the Statistical classification of economic activities in the Slovak Republic, SK NACE Rev. 2, respondents were selected from Divisions 10 and 11, i.e., Division 10: Manufacturing of food and Division 11: Manufacture of beverages, Section C – Manufacturing and from Division 56: Food and beverage service activities, Section I – Accommodation and food service activities. The research was realized from January to February 2022. The target number of respondents was 120, which we considered a proportionate number of respondents for both Sections C and I (60 respondents in each of them). In Section C, there were enterprises of all size categories; in Section I small and micro enterprises prevailed. Respondents were personnel managers and line managers, or owners of mainly small enterprises. Apart from their job positions (personnel managers, line managers, owners of small enterprises), we also identified the respondents' gender, age, and education. In section C, there were 43 male respondents and 17 female respondents; in section I, there were 22 male and

38 female respondents. With other demographic data, descriptive statistics was used. In section C, the average age of respondents was 52.708 years, and the average age of respondents in section I was 44.475 years. Respondents of section C had completed mainly universities of the second cycle (88% respondents), and 12% of them completed secondary education. Section I was more heterogeneous in terms of education: 15% of respondents had completed secondary education, 20% had completed university education of the first cycle and 65% had completed university education of the second cycle.

Descriptive statistical methods were applied to evaluate the results of the research. Two types of methods were used for the statistical processing of the collected data: manual processing, for which the barcode method was applied to certain types of questions, and automated processing, for which the collected data was analyzed in Microsoft Excel. The results of the statistical processing are presented in the tabular form and the conclusions are described in the text.

### 4 MAIN RESULTS AND DISCUSSION

The empirical study focused on the analysis of the forms of instruction applied in the different types of in-company continuing education. When choosing the form of instruction, we found that the number of participants, the duration and the repeatability of the training were decisive. In describing how the training activities were organized by the provider and the training participants, we focused on individualized, collaborative, and participatory forms of training. The analysis of the types of in-company continuing professional education and the selected forms of training showed similar development trends. This allowed us to present the data from both sections in the following tables. We have drawn on the empirical analysis of the research conducted by the Department of Andragogy of the Faculty of Arts at Comenius University in Bratislava in the years 2006–2008 [20]. It can be considered as comprehensive research, which created the conditions for further partial research focusing on the specific characteristics of certain types of education as well as on certain forms of education.

The objective of the empirical analysis was to examine the types and forms of continuing professional development applied in the selected companies and to measure their impact on employee performance through the respondents' opinions. Respondents' opinions are presented in frequency tables, and the data collected are described verbally. By frequency, we express the number of occurrences of the different types of education and, in parallel, the forms of education and training applied.

As shown in Table 1, occupational safety and health (OSH) training is among the most frequently applied types of training that must be completed by all employees. Typically, training is delivered en masse, either through physical attendance or in the form of training on an online platform that replaces direct personal contact. In addition, in many companies, OHS is implemented as one-on-one training, taking into account the specific needs of the instructors (e.g., inspection technicians, OHS and FPT specialists). Fire-protection training (FPT) is delivered en masse or in group settings. Employees typically remain on the job site, even after hours, and are trained in groups as needed.

Types of Education				Forms of I Number of	Educatio Particip	n – ants	Forms of Education			
				Individual	Group	Mass	Individualized	Cooperative	Participatory	
MT O		OSH	120			89	31			
		FPT			42	78	—			
		Drivers' training	28	22			6			
		Forklift servicing	17	17			-			
		Minimum hygiene standards in food industry	120	8	112		_			
		Competence in electrical engineering	5	5			—			
VT	QT	Adaptation training	120	68	52		84	36		
	Initial training		120	120			120			
		Special-purpose professional training	24	19	5		4	8	12	
		Key qualifications	120		72		23	9	16	
Specialist training         RT       Re-qualification in related area         Re-qualification for a new occupation		Specialist training								
		Re-qualification in related area	8	8			3		5	

#### Table 1. Types of training activities in on-the-job training

*Notes:* MT – mandatory (normative) training; VT – voluntary training; QT – qualification training; RT– re-qualification training; N – number of opinions.

Source: Results of empirical research (respondents were allowed to select several types of education/training).

Professional driver training and forklift operator training are applicable to only a specific sector of personnel performing these job activities. In addition to individual forms, individualized forms for professional driver training are also used. In the opinion of the 28 respondents, 22 respondents mentioned the individualized form of training and 6 respondents described driver training as individualized training divided into passenger and freight transportation. Minimum hygiene standards training applies to workers who are in direct contact with food. In the sections analyzed, this training is fully implemented. It is mainly carried out in groups; about 7% is also implemented individually (i.e., with a maximum number of 3 participants). In the analyzed group, participation in training in the field of electrical engineering is required if the employee is in contact with the equipment in certain operations. This concerns 4.2% of the employees in the sample of companies analyzed.

Voluntary education in the company has been implemented individually, in groups and en masse using individualized, cooperative and participatory forms of education.

Within the framework of skills training, adaptive education is fully implemented in the analyzed divisions. It is implemented individually and in groups, as well as in individualized and cooperative forms. This training is also implemented in all the entities analyzed. Specialized professional training is provided for only 20% of the respondents, which can be considered insufficient, given that this is employee training, which includes the deepening and renewal of employee qualifications as part of the company's continuing professional development.

The key qualifications represent a wide variety of learning activities, ranging from learning skills development to mathematical, numerical, business and other skills to various communication skills. Responses from interviewees show that each of the covered entities offers at least some educational activities. The focus is on developing employees' multilingual communication skills, promoting mathematical literacy, and developing their digital skills. Less attention is given to learning skills

and developing entrepreneurial skills. Respondents did not mention any other key skills. In addition to group instruction, this type of instruction is implemented in its individualized, cooperative and participatory forms.

Only 8 respondents stated that requalification training is provided in their company; namely, requalification in a related field, where individualized, individualized and participatory forms of education are applied. The advantage of individual and individualized education is that it is adapted to the specific needs and possibilities of the learners. In individualized training, modular systems are often used, while participants are divided according to their skills. Because of the close connection between theory and practice, cooperative education was applied. Its aim was to support teamwork and to create conditions for team learning. Participatory education focused on the motivation of the participants and their involvement in the creation of the educational program. The aim was to develop the commitment and creative approach of individual participants in the education itself. In this form of education, independent education and independent problem solving were supported by projects aimed at solving global problems in business practice.

All the compulsory educational activities studied are of short duration (up to four months). If the training lasts longer than four months, it is a form of long-term education, the beginning and end of the training period are defined and the educational activities are not performed on a daily basis. Voluntary in-company education was usually organized as short-term training courses. As shown in Table 2, the exception is key qualification courses; these are organized on a long-term basis, as are requalification courses. Three out of eight respondents indicated that re-qualification training is organized as long-term educational activities.

		Types of Education	Forms of E by Dur	Education ration	Forms of Education by Repeatability		
			Short-Term	Long-Term	One-Off	Cyclical	
MT		Occupational safety and health (OSH) training	120	_		120	
		Fire protection training (FPT)	120	—		120	
		Drivers' training	28			28	
		Forklift servicing	17			17	
		Hygiene minimum for food industry workers	120			120	
		Electrical engineering competence	5			5	
VT	QT	Adaptation training	120		120		
		Initial training	120		120		
		Special-purpose professional training	24		24		
		Key qualifications		120		120	
		Specialist training					
	RT	Re-qualifications in a related area	5	3	8		
		Re-qualification for a new profession					

Table 2. Types of education by their duration and repeatability

*Notes:* MT – mandatory (normative) training; VT – voluntary training; QT – qualification training; RT– re-qualification training; N – number of opinions.

Source: Results of empirical research (respondents were allowed to select several types of education/training).

All educational activities given by legislation are implemented as cyclical education. There are different intervals required, and these can be observed in the cases of re-qualification and qualification renewal. Voluntary educational activities are implemented one-off. The development of key qualification was an exception, which cannot be organized by employer entities as one-off events. Their importance for the performance of almost all work activities must be realized, and a considerable scope of education must be ensured in cycles.

Respondents' replies indicate that their companies do not deal with specialist training, the aim of which is to acquire specific knowledge and skills in connection with the implemented changes in science and technology and the gradual digitalization of the economy. Specialist training can be considered as an introduction to the preparation for the Industry 4.0 transformation.

The lack of willingness on the part of managers as respondents to disclose specific information about their companies was reflected in the number of respondents and appeared to be a limiting factor in our empirical research.

We believe that special attention in further professional education should be paid to special-purpose professional training, which focuses on vocational education. However, this is not the case in the organizations analyzed. Out of 120 respondents, only 20% said that this type of qualification education is provided and supported by their organizations. Even in those companies where the respondents mentioned this type of training, it is implemented on short-term and one-off bases. This type of training can affect the employees' performance. The content of corporate qualification training is mainly focused on deepening and renewing education. However, in special-purpose professional training, upgrading of qualifications provided by formal education is also included. The employers may agree with improving the employees' qualifications and grant them a study leave. There are companies that provide all kinds of special-purpose professional training and support their employees in upgrading their qualifications, as presented in Table 3.

	Special-Purpose Professional Training (SPPT)								
Section	Upgrading Qualification		Deep Qualifi	ening ication	Renewing Qualification				
	N	%	N	%	N	%			
C – Manufacturing	5	21	13	54	3	13			
I – Accommodation and food service activities	2	8	11	45	2	8			
Total	7	29	24	100	5	21			

Table 3. Employees' special-purpose professional training

Source: Results of empirical research (total number of respondents was 120.

Special-purpose professional training of employees was implemented in 24 organisations (i.e., 20% of the total number of respondents; the percentages in the table are calculated from 24 respondent corporate entities).

In the case of special-purpose professional training, it can be stated that all employers who implement this kind of education provide deepening of qualifications. Some employers complete it along with renewal training and also with upgrading qualifications in formal education.

Research papers on employee training published abroad frequently deal with the relationships between employee training and its benefits to the employee, on the one hand, and to the company, on the other hand, as well as relationships between technologies and education [21]. Michelli et al. [22] identified and analyzed the key factors affecting the success of OHS trainings in companies.

For exploring the mutual relationships between variables, we calculated correlations. If we consider the entire sample of 120 respondents, the calculation of correlation coefficient (-0.28538) characterizes a medium-strong relationship between education and employee performance. As shown in (1), this relationship was verified by means of linear regression with the result of F = 10.46; p = 0.0015, hence:

$$HVUPP = 4.62 - 0.31Z$$
 (1)

This relationship is statistically significant, and it corroborated the fact that education (namely special-purpose professional training) influences employee performance (see Table 4).

	Kind of Education								
Performance Evaluation	After Special-Purpose Professional Training	After Adaptation Training	After Initial Training and Introductory Learning	After Key- Qualifications Training					
Average	3.78	3.94	3.56	3.25					
Standard deviation – STDE	0.81	0.791	0.671	0.822					
Modus	3	4	3	3					
Median	4	4	3	3					

#### Table 4. Selected descriptive statistics of employee performance evaluation

Source: Results of empirical research (EXCEL) – evaluation of an individual's performance was in the interval of (1–5).

The best average performance was evaluated after adaptation training. In the case of special-purpose professional training, the employee average performance was influenced by employer entities that provide this kind of education, i.e., 20% of entities addressed. A closer examination would necessitate further research with a higher number of respondents.

In further analyses, the focus was on the evaluation of performance after adaptation training, initial training and introductory learning, and key-qualifications training, which belong to voluntary training/education in a company. On the basis of a correlation matrix, the results presented in Table 5 were obtained.

The relationships in the case where the correlation coefficient was higher than 0.3 are considered to be valid. In the evaluation of an individual's performance after key-qualification training, the correlation with participatory form of training is medium strong. This means that if the duration of training in the field of key qualifications in the form of participatory training increases, then the employees' individual performance also increases.

As shown in (2), the relationship between the evaluation of performance and the application of the participatory form of education was verified by regression with the result of F = 14.35; p = 0.0002.

$$HVJKK = 3.14 + 0.158FPKK$$
 (2)

It is pointless to explore the relationships ascertained by means of regression in greater detail in view of the content meaning of individual variables. However, we can state there is a medium-strong relationship between them, and in one case, even a strong relationship. Our intention was to describe individual types of further corporate education and examine their various forms of organization in companies. Each training should be beneficial to an organization; therefore, we consider the employee performance to be the most significant benefit.

	S	Z	HVJ A	HVJ Z	нујкк	FI A	FS A	FIZ A	FK A	FS KK	FIZ KK	FK KK	FP KK
S	1.000												
Z	0.055	1.000											
HVJA	0.053	0.024	1.000										
HVJZZ	-0.037	0.040	0.125	1.000									
HVJKK	0.265	0.028	0.074	-0.057	1.000								
FI A	-0.034	0.117	0.170	0.127	-0.062	1.000							
FS A	0.034	-0.117	-0.170	-0.127	0.062	-1.000	1.000						
FIZA	0.018	-0.032	0.069	-0.040	0.218	-0.006	0.006	1.000					
FK A	-0.036	0.020	-0.067	0.052	-0.222	0.022	-0.022	-0.980	1.000				
FS KK	-0.136	0.000	0.091	0.046	-0.270	0.247	-0.247	-0.225	0.238	1.000			
FIZ KK	0.064	0.014	-0.071	0.037	-0.019	0.169	-0.169	-0.060	0.051	-0.596	1.000		
FK KK	-0.032	-0.044	-0.099	-0.049	0.106	-0.134	0.134	0.183	-0.186	-0.349	-0.139	1.000	
FP KK	0.147	0.018	0.029	-0.071	0.329	-0.449	0.449	0.252	-0.257	-0.480	-0.191	-0.112	1.000

**Table 5.** Correlation matrix of evaluating the performance and forms of education

*Notes:* S – Section, Z – interest in education/training; HVJ A – evaluation of an individual's performance after adaptation training; HVJ Z – performance evaluation after initial training and initial learning; HVJ KK – evaluation of an individual's performance after key-qualifications training; FI A – individual form of adaptation training; FS A – group form of adaptation training; FIZ A – individualised form of adaptation training; FK A – cooperative form of adaptation training; FS KK – group form of training in key qualifications; FIZ KK – individualized form of training in key qualifications; FK KK – cooperative form of training in key qualifications; FP KK – participatory form of training in key qualifications.

Source: Research results.

## **5 CONCLUSIONS**

In the knowledge-based society, the need for continuing professional education has come to the forefront. Nowadays, companies can no longer secure a qualified workforce solely through the influx of school graduates. Much more than before, the focus is on in-company vocational training, which must be considered from the perspective of both mandatory and voluntary training. All groups of employees, regardless of their professional orientation and age, are obliged to participate in educational activities. Education becomes the only way for employees to ensure their ability to work. The development of key competencies is now seen as an extension beyond qualification, and the upcoming digitization and the gradual transformation to Industry 4.0 are evidence of this phenomenon. Education is important not only for people's professional careers, but also for their personal lives. Continuous professional training in companies should create a coherent system so that employees can be continuously educated and trained in accordance with the needs and conditions of work performance.

Research results indicate that voluntary continuing education in companies is not cyclical, but is organized as short-term, ad hoc educational activities. This type of education does not sufficiently prepare employees for the new conditions and requirements of performing different work activities than they have been doing until now. Education is mainly focused on supplementing and increasing the employees' knowledge and skills.

Under the influence of the transformation to Industry 4.0, it can be expected that a number of professional activities will disappear in the future, while new professional activities will emerge, which will also require different knowledge and skills from entrepreneurs. With fewer jobs, the status quo will be maintained, but in most cases, employees will also face the need for education in various scientific disciplines. Many job activities will require knowledge and skills at the interface of several scientific disciplines. A multidisciplinary approach will require specialized training, which is not currently provided in companies as part of continuing professional education.

The future of corporate training must be ensured by continuity and modularity. Every employee interested in training must have the opportunity to train, taking into account his or her previous knowledge, skills and experience, without any restrictions. The different forms of education described in this document can be applied in both physical and virtual learning environments.

Nowadays, temporal and spatial limitations can easily be eliminated by means of virtual learning environments [23]. Educational projects for individual company education modules need to be created in order to allow the combination of work and education at any time employees need it. At the same time, there is a need for collaboration between the education sector and individual employers.

In the future, we intend to explore the application of forms of education in continuing professional development from the perspective of the needs and interests of employees.

### 6 ACKNOWLEDGMENT

The paper is part of the research project VEGA No. 1/0328/21 "Post-Pandemic Business Management: Identifying Temporary and Sustainable Changes in Sequential and Parallel Management Functions in the Context of the COVID-19 Pandemic."

## 7 **REFERENCES**

- Z. Kanetaki, C. Stergiou, G. Bekas, C. Troussas, and C. Sgouropoulou, "Analysis of engineering student data in online higher education during the COVID-19 pandemic," *International Journal of Engineering Pedagogy (iJEP)*, vol. 11, no. 6, pp. 27–49, 2021. Available: https://doi.org/10.3991/ijep.v11i6.23259 [Accessed Oct. 14, 2022].
- S. Jacques, A. Ouahabi, and T. Lequeu, "Synchronous e-learning in higher education during the COVID-19 pandemic," In Proc. IEEE Global Engineering Education Conference (EDUCON), Vienna, Austria, pp. 1102–1109, 2021. Available: <u>https://doi.org/10.1109/</u> EDUCON46332.2021.9453887
- [3] I. Tureková and T. Bagalová, "Knowledge and experiences of safety and health occupation risks among students," *International Journal of Engineering Pedagogy (iJEP)*, vol. 8, no. 5, pp. 108–120, 2018.
- [4] Z. Kanetaki, C. Stergiou, G. Bekas, S. Jacques, C. Troussas, C. Sgouropoulou, and A. Ouahabi, "Grade prediction modeling in hybrid learning environments for sustainable engineering education," *Sustainability*, vol. 14, p. 5205, 2022. Available: <u>https://doi.org/10.3390/</u> su14095205 [Accessed Oct. 14, 2022].

- [5] M. Ally and A. Tsinakos, Eds., Increasing Access through Mobile Learning. Perspectives on Open and Distance Learning. Vancouver: Commonwealth of Learning Press and Athabasca University, 2014. https://doi.org/10.56059/11599/558
- [6] S. Jacques and T. Lequeu, "The attractiveness of reversing teaching forms Feedback on an electrical engineering course," *International Journal of Engineering Pedagogy* (*iJEP*), vol. 10, no. 3, pp. 21–34, 2020. Available: <u>https://doi.org/10.3991/ijep.v10i3.12361</u> [Accessed Oct. 14, 2022].
- [7] J. Bursová, Education of Seniors in Hobby Education. Dublin: ISBCRTI, 2021.
- [8] Act No. 124/2006 Coll. on Occupational Safety and Health (SK).
- [9] Decree of the Ministry of the Interior, no. 121/2002 Coll. on fire prevention as amended and related regulations (SK).
- [10] Act No. 280/2006 Coll. on Compulsory Initial Qualifications and Periodic Training of Certain Drivers as amended (SK).
- [11] Hygienické minimum pre prácu v potravinárstve/Minimum hygiene standards for working in food industry. Available: <u>http://global-education.sk/seminare/hygiena/hygienicke-</u> minimum-pre-pracu-v-potravinarstve.html [Accessed Mar. 25, 2022].
- [12] Decree No. 508/2009 Coll. of the Ministry of Labour, Social Affairs and Family laying down the details for occupational safety and health in working with pressure, lifting, electric and gas technical equipment and specifying technical equipment considered as classified technical equipment (SK).
- [13] Commission Staff working document accompanying the document "Proposal for a Council Recommendation on Key Competences for Lifelong Learning" {COM(2018) 24. final}. EU Monitor. Available: <u>https://www.eumonitor.nl/9353000/1/j9vvik7m1c3gyxp/</u>vkl58h3b5hm0 [Accessed Mar. 25, 2022].
- [14] L. van Rodijnen, "Quality of Work in the Smart Industry; How to measure? A qualitative research on the appropriate aspects for a quality of work measuring instrument in a smart industry environment with the WEBA (Welzijn Bij de Arbeid) as a starting point. Business Administration 2020–2021," Dissertation thesis, Organisational Design and Development, Nijmegen School of Management, Radbout University, Nijmegen, Netherlands, 2021.
- [15] J. Veteška, *Přehled andragogiky: úvod do studia vzdělávaní a učení sa dospělých.* Praha: Portal, 2016.
- [16] Z. Kanetaki, C. Stergiou, C. Troussas, and C. Sgouropoulou, "Developing novel learning spaces through social media channels for sustainable CAD engineering education," In Proc. The 2nd International Conference (NiDS 2022). NiDS 2022. Lecture Notes in Networks and Systems, vol. 556. Springer, Cham. Available: <u>https://doi.org/10.1007/</u> 978-3-031-17601-2\_35 [Accessed Oct. 14, 2022].
- Z. Kanetaki, C. Stergiou, G. Bekas, S. Jacques, C. Troussas, C. Sgouropoulou, and A. Ouahabi,
   "Acquiring, analyzing and interpreting knowledge data for sustainable engineering education: An experimental study using YouTube," *Electronics*, no. 11, p. 2210, 2022. Available: https://doi.org/10.3390/electronics11142210 [Accessed Oct. 14, 2022].
- [18] Z. Kanetaki, C. Stergiou, G. Bekas, C. Troussas, and C. Sgouropoulou, "Data mining for improving online higher education amidst COVID-19 pandemic: A case study in the assessment of engineering students." In *Novelties in Intelligent Digital Systems*. Amsterdam, Netherlands: IOS Press Ebooks, 2021, pp. 157–165. Available: <u>https://doi. org/10.3233/FAIA210088</u> [Accessed Oct. 14, 2022].
- [19] G. Bekas, S. Jacques, C. Troussas, and C. Sgouropoulou, "Evaluating remote task assignment of an online engineering module through data mining in a virtual communication platform environment," *Electronics*, no. 11, p. 158, 2022. Available: <u>https://doi.org/</u> 10.3390/electronics11010158 [Accessed Oct. 12, 2022].

- [20] *Systemization of types and forms of andragogy*, VEGA research project No. V-06-434-00, Ministry of Education, Science and Research, Slovak Republic.
- [21] I. Simonics, "Relationships among economy, industry, vocational education and training and higher engineering education – The trefort project editorial," *International Journal* of Engineering Pedagogy (iJEP), vol. 10, no. 5, pp. 4–6, 2020. Available: <u>https://doi.org/</u> 10.3991/ijep.v10i5.16747 [Accessed Sept. 6, 2022].
- [22] G. J. L. Michelli, G. Vitrano, and A. Calabrese, "Occupational safety and health education and training: A latent dirichlet allocation systematic literature review," In Proc. of the 21st Congress of the International Ergonomics Association (IEA 2021). IEA 2021. Lecture Notes in Networks and Systems, vol. 221. Springer, Cham. Available: <u>https://doi.org/</u> 10.1007/978-3-030-74608-7\_61 [Accessed Mar. 25, 2022].
- [23] D. Lajčin and D. Porubčanová, "Teamwork during the COVID-19 Pandemic," *Emerging Science Journal*, vol. 5, no. 17 (Special Issue), pp. 1–10, 2021. <u>https://doi.org/10.28991/esj-2021-SPER-01</u> [Accessed Mar. 25, 2022].

## 8 AUTHORS

Assoc. Prof. PhDr. PaedDr. Gabriela Gabrhelová, PhD., DBA, LL.M is the director of DTI University in Dubnica nad Váhom, Slovakia, where she also holds the position of an associate professor. She earned her university degree at the Faculty of Management at Presov University in Presov, where she also earned her PhD. degree in 2012. In 2018, she graduated from DTI University, where she completed teacher training in the study programme Teaching Economic Subjects. She is a recognized expert in the fields of Management and Field didactics. In her research and scientific work, she focuses on the issues of emotional intelligence in school leaders, resilience, teachers' key competencies, further education and training, distance teaching, and inclusive education. She has been the chief investigator and a co-investigator of a number of research projects and cooperates with both public and private universities in Slovakia and abroad (email: gabrhelova@dti.sk, ORCID: https://orcid.org/0000-0002-8161-2054).

**Assoc. Prof. Ing. Marta Matulčíková, PhD.** works at the Department of Management, Faculty of Business Management, University of Economics in Bratislava, Dolnozemská cesta 1/b, 85235 Bratislava, Slovakia, where she conducts courses in Management and coordinates the study program in subject Career and Education Management. She acts as a supervisor of doctoral, Master and Bachelor theses in these areas and is involved in research projects either as a team member or project coordinator (email: marta.matulcikova@euba.sk, ORCID: https://orcid.org/0000-0003-3603-8919).

**Assoc. Prof. PaedDr. Eva Dolinská, PhD.,** Associate Professor of Pre-school Pedagogy, Catholic University in Ružomberok, Faculty of Education, Hrabovská cesta, 1, 034 01 Ružomberok, Slovakia. She works in the field of preschool and elementary Pedagogy, her scientific/research activity is focused on interpretation in the intersection of art disciplines especially esthetics, music and literature. She is an author of several monographs and scientific works in the field of art in the context of educational area and inclusive education. (email: <a href="mailto:edol@centrum.sk">edol@centrum.sk</a>, <a href="https://orcid.org/0000-0002-9801-814X">https://orcid.org/0000-0002-9801-814X</a>).

**Assoc. Prof. PaedDr. Silvia Barnová, PhD., MBA** currently works at DTI University in Dubnica nad Váhom, Slovakia, where she holds the position of an associate professor and is also the director of a private school providing preprimary, primary and secondary education. She graduated from Comenius University in Bratislava, where she also earned her PhD. degree in 2010. She is a member of the Scientific Board of DTI University in Dubnica nad Váhom, the Accreditation Committee of the Faculty of Education of Comenius University in Bratislava and of the ENTER Monitoring Committee. Within her research activities, she focuses on the fields of school management, crisis planning in education, distance teaching, inclusive education and teacher resilience. Currently, she is the managing editor of the scientific journal *Acta Educationis Generalis* and a member of the editorial boards of *Auspicia, International Journal of Language and Translation Studies, Pedagogická revue* and *Psychológia a patopsychológia dieťaťa* (email: <u>barnova@dti.sk</u>, ORCID: <u>https://orcid.org/0000-0001-5611-4072</u>).

**Assoc. Prof. PhDr. Daniela Breveníková, CSc.** (at present, retired academic) taught courses in linguistics at the Department of Linguistics and Translatology, Faculty of Applied Languages, University of Economics in Bratislava. The focus of her publication activities is on education management, English for specific purposes (ESP), and rhetoric. She is an author and co-author of several book publications, including bilingual dictionaries of terminology. (email: <u>daniela.brevenikova@euba.</u> sk, ORCID: https://orcid.org/0000-0002-5529-7652).