Assessing human resource needs for digital transformation at enterprises and proposing solutions in human resource training for universities

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ABSTRACT

Transforming the educational model for higher education in the context of digital transformation is an inevitable trend. This represents the right direction to take advantage of the 4.0 technology revolution, creating high-quality human resources to meet the requirements of the labor market. The purpose of the study is to analyze the appropriate higher education model in the context of the digital economy towards the development of high-quality human resources to participate in the operation of the digital economy. The requirements for the development of digital universities for countries in general and Vietnam in particular need to constantly innovate and reform the national education systems to further improve the quality and effectiveness of higher education, towards an education that adapts to the context of digital transformation and the covid 19 epidemic. The issue of the quality of human resources must be concerned by education systems to make breakthrough changes and should be prioritized by countries. The article uses qualitative, quantitative, comparative, survey survey and experimental data analysis methods. The survey was conducted on 100 businesses that have cooperation activities with the university through online form via email. The main results of the study provide solutions for adjusting the training methods and models at universities in Vietnam in response to the 4.0 technology revolution and the covid 19 epidemic.

Keywords: Digital transformation in education, digital citizen, training programs, job demand, digital businesses.

INTRODUCTION

Recent surveys show that the demand for human resources from 2020 to 2025 is expanded by 8 groups of free-moving industries in ASIAN along with economic growth after the signing of a free trade agreement. Vietnam - EU. The forecast results show that, by 2025, the promotion of the economy and the free movement of occupations in the ASIAN bloc support GDP growth of 14.5%, job demand growth of 10.5%. Dahlsrud (2008) related the existence of businesses in the current context associated with digital transformation. Enterprises will implement digital transformation to be able to create growth in profits from production and business activities, and at the same time improve their competitiveness. In favor of the welfare perspective, businesses cannot separate themselves from society but must integrate themselves into the digital transformation process (Samuel O. Idowu & Céline Louche, 2011). Therefore, businesses need to plan human resources (Human Resource Planning).

Research by Costa, I., et al,. (2021) pointed out, the impact of new digital technologies creates challenges for digital transformation in the areas of corporate sustainability. Digital technology, cloud computing, has appeared to increase the operational efficiency of enterprises. To achieve growth goals, countries, especially emerging countries, need good labor resources with technological knowledge. They will be directly involved in bringing technology into their business and improving sustainability-related outcomes.

Forecasting the demand for human resources, especially high-quality human resources to participate in the digital transformation process in enterprises, plays an extremely important role. This is a stepping stone for the management of human resources in the enterprise, and at the same time helps them set up appropriate recruitment and use policies for high-quality human resources. Digital transformation (DT) of agencies for students`part time jobs in the Republic of Croatia (RC) began to be mentioned through the adoption of the Act of student activities (Act). The distinction between digitization and DT in part led to the fact that the electronic student contract currently implies the issuance of an online student contract, which was not signed by an advanced electronic signature. Changes in business caused by COVID-19 contributed to greater utilization of existing online contracts and pointed to inconsistencies in the work of intermediaries. The aim of this paper is to present, based on a literature review and analysis of the existing situation through the case study, the conceptual model of the DT system for mediation in employment and to test the digital maturity of the current

system. The scientific contribution of the paper is in presenting a model that can be implemented in the daily practice of all students employment agencies, while the social contribution is reflected in the attempts of DT public institutions that should be used as an example to the private sector (Sonja & Neven, 2021).

Forecasting demand for human resources, especially high-quality human resources, enables businesses to well fulfill the requirements of digital transformation and fulfill the requirements necessary for the operation and development of the business. Forecasting human resource demand will help businesses analyze the quantity and quality of human resources for business development. Thereby helping businesses apply necessary measures to adjust human resources reasonably and effectively. The human resource forecasting process also allows administrators to anticipate the surplus and shortage of labor so that the business can have a suitable plan. Forecasting the demand for human resources helps businesses that have taken into account labor fluctuations at the forecast time, so they can determine the number of people who are short or will not need to recruit more workers. Predicting the demand for human resources also helps to limit the costs incurred if the "right people" and "right jobs" are not arranged. Thus, a bad forecast of human demand will increase the cost of the organization, which is to pay wages for an unnecessary and redundant labor. Therefore, businesses when recruiting human resources, especially human resources graduated from universities to promote digital transformation activities at enterprises, should pay attention to the purpose of demand forecasting. This work aims to maximize the use of human resources and develop human resources in the future of the enterprise; helping businesses ensure enough people, right people, right jobs, right time to accomplish the goals so that the organization can achieve the best results; help businesses do a good job of coordinating human resource activities (HRM) with the goals set by the organization; Helping businesses make good forecasts about future human resource needs, as well as build plans to ensure there are enough necessary human resources at different times. From there, it will help businesses identify human resource needs, make policies and implement operational programs to ensure that the organization has enough human resources. This human resource ensures the right qualities and skills to perform work with high productivity, quality and efficiency, adapting to the development of the 4.0 technology revolution (Nguyen Thi Hang, 2021). The assessment of human resource needs of an enterprise includes the following two specific work contents: (1) Forecasting short-term human resource demand; (2) Forecast of human resource demand in the long term.
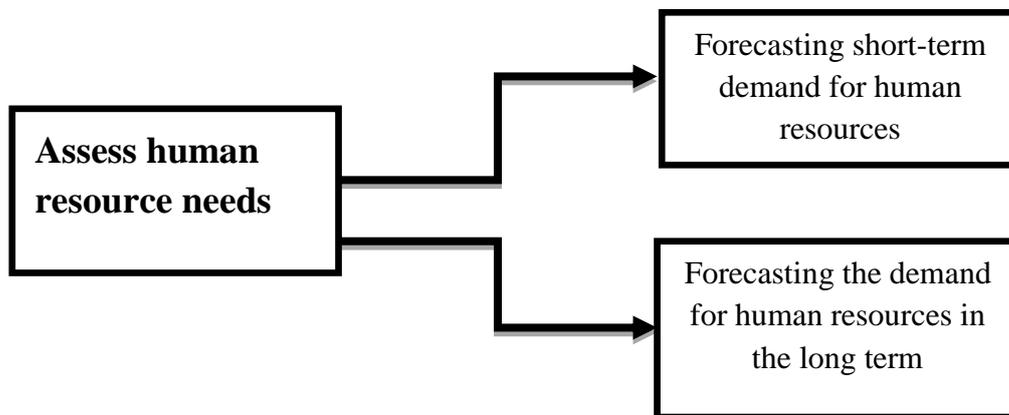

Fig.1: Work to be performed when assessing the human resource needs of businesses implementing digital transformation

Forecasting short-term human resource demand: This job is usually built by enterprises within a period of 1 year in order to overcome and solve the shortage or surplus of human resources in a short time at the enterprise. Forecasting long-term human resource demand: This job is usually built for a longer period of time, usually from 3-7 years, and is associated with the long-term development strategy of the business. This form is often applied to businesses with long-term stable occupations such as economics, accounting, and finance. In the US, universities are mainly involved in the teaching of necessary skills, associated with the practice of developing programs and plans at enterprises (William E. Becker, Darrell R. Lewis, 1992). Germany's FH Mainz University of Natural Sciences is a member of SAP - a leading enterprise in providing solutions and business management software here that has linked teaching with business development. The demand for human resources for digital transformation at enterprises will be forecasted on the basis of workload and work performance of each employee (labor level and ability to increase labor productivity). When businesses use methods or techniques to forecast human resource needs, they need to analyze the environment inside and outside the organization. The internal factors of organizations and enterprises include: Digital transformation goals at the enterprise in the future; The plan to build a digital transformation strategy at the enterprise;

Production scale of business organizations when applying digital transformation; Operational methods of business organizations when applying digital transformation; Regimes and policies of business organizations when applying digital transformation; Labor demand of business organizations in the future is associated with the need for digital transformation; Changes in equipment, technology, techniques, improvement of management apparatus when applying digital transformation. Factors external to the organization and enterprise include: The supply of labor according to the organization's expertise should be associated with the need for digital transformation; Time and geography of digital transformation; The State's policies and regulations on digital transformation. Therefore, in order to get digital human resources to participate in digital transformation for businesses, it is necessary to improve learners' career adaptability, so it is advisable to establish applied research centers at universities (Robert M. Colton, 2016). At the same time, it is necessary to bring the development principles of manufacturing industries into the universities of Robert Barker (2016). In the strong development trend of the digital economy, the training of human resources at universities needs to focus on expanding professional knowledge, investing in new technologies in teaching practice and experiments in order to develop professional skills. career adaptability skills for learners so that they can meet the increasing requirements of the labor market and the trend of international economic integration.

As such, digital transformation needs to combine with skilled employees and executives to unleash its transformative power. Thus, digital transformation needs both technology and people. People must have technological knowledge and be aware of the changes of technology (Nadkarni, S. & Reinhard, P., 2020).

Anna, S. & Thomas, H. (2017) studies how Digital Directors drive the Digital Transformation of their Companies. The research team has clearly confirmed the role of human resources in business performance. Chief Digital Officer (CDO) as the new chief executive officer at the top management level of companies undergoing digital transformation. Anna, S. & Thomas, H. present six CDO case studies and describe how they accomplished their positions. From these cases, the research team identified the main factors driving CDO employment, the three types of roles in which CDOs play a key role, and the skills and competencies they need for each type of role.

LITERATURE REVIEW
Human resources are a fundamental factor for the success of businesses. The Industrial Revolution 4.0, with the main pillar being Digital, the trend that machines will replace humans is presenting businesses with many new development opportunities that need digital transformation. Kim and Lee (1986) confirmed the role of exploiting and applying information systems in enterprise development to create increased labor productivity. Enterprises want to survive, they need to invest and apply new technology platforms, which are digital technologies, into production and business activities. To operate the AI technology platform, cloud computing, Blockchain in economic development, enterprises need to meet the demand for high-quality human resources. Such human resources must have the core values obtained from the training process, must meet not only professional qualifications but also require skills, expertise, and high adaptability to changes. and development of technology. Besides, the ability to adapt to the change of the technology environment, practical skills and awareness, working style of learners after graduation has not been appreciated by enterprises yet is also one of the barriers. Barriers make businesses afraid and not really sure about the quality of human resources who have been trained at universities (Nguyen Thi Hang, 2021).

Viotti (2002) asserted that the educational innovation system in developing countries, where "learning" seems to be more important than "innovation" in developed countries. This assertion is also consistent with the notion of Lunvall (1992) that "learning" always takes place at the center of the "national innovation system". High human resource training is one of the important features of the "National Innovation System" approach in order to create high-quality human resources, adapting to the new development trend of society (Edquist, 1997).

Geisler & Rubenstein (1989) asserted, the coordination between universities and businesses covers different levels, from the development of digital businesses, to the supply of high-quality human resources capable of good operation of the digital technology platform. The establishment of innovative research centers in enterprises so that learners have the opportunity to practice and experiment with new advances in technology is an opportunity to develop the digital economy. Therefore, the development of digital human resources is the process of developing and facilitating the liberation and promotion of human capabilities through organizational development, training and personal development. The purpose of this process is to improve adaptability to the trend of digital transformation (Swanson, 2001; Korkmaz & Mirici, 2021).

In developed countries, businesses often order universities to conduct research, in which priority is given to research that applies Big Data or cloud computing technologies (Hang Nguyen Thi, 2021). Universities have now directed research and transferred research results to enterprises (Lee, 2000). Businesses that want to develop digital transformation need to recruit high-quality human resources. In addition to investing in and equipping modern machines and information systems, facilitating the settlement of arising operations, management and administration of the business (Alzoubi, A., 2011).

Digital transformation is a suitable development model for businesses to apply the achievements of the industrial revolution 4.0 to all fields. The digital transformation process of enterprises depends on their financial capacity, technology and willingness to participate. Enterprises need to develop a development strategy and must devise a roadmap for appropriate digital transformation, along with creating.

METHODS AND MATERIALS
Research design
Methods of descriptive statistics and comparative statistics are used to make statistics and analyze the demand for online training development at universities.
The expert method is used to practice exchanging and consulting with experts (scientists, managers) to get information about human resource needs for digital transformation at enterprises.
The questionnaire is designed with 5 groups of multiple choice questions. The sample size includes 155 subjects who are leaders and managers at enterprises.

Participants
The article is designed with 22 observations belonging to 5 groups of large variables. The total number of survey participants is 155. In which, 18 survey questionnaires were collected from state-owned enterprises (accounting for 10.3%); 80 votes were collected from private enterprises (accounting for 55.9%) and 57 votes were collected from foreign joint venture enterprises (accounting for 33.8%).

Data collection tools
To collect data for research, the author uses Google Forms. After designing the survey via Google Forms, the author sent it to respondents via e-mail. Besides, the author also conducted interviews with managers at enterprises. Record information through direct interviews with managers at the University of Information and Communication Technology to collect information on trends in human resource training to meet labor market needs. motion.

Data analysis
All response data will be analyzed and processed with the support of SPSS software version 20. From there to determine the logic and correlation of the observed variables. The specific results and recommendations of my research paper aim to clearly define how human resource training can meet the labor market needs in the digital transformation era.

RESULTS
The total number of questionnaires distributed was 150 surveys for 100 enterprises. After collecting the number of distributed questionnaires, the author eliminated 5 unsatisfactory responses, and the author selected 150 valid responses for data entry. Thus, the valid sample size to be included in the study is n= 150. After entering data into the SPSS data processing software, the characteristics of the research sample are statistically as follows (Figure 1).

Table 1: Characteristics of business types of the sample

Type of business	Frequency appear	Percentage (%)	Percentage of samples that are valid (%)
State enterprises	18	12	10.3
Foreign joint venture enterprise	80	52	55.9
Private enterprise	57	36	33.8
Total	155	100.0	100.0

Out of 155 enterprises participating in the survey, 18 survey questionnaires were collected from state-owned enterprises (accounting for 10.3%); 80 questionnaires were collected from private enterprises (accounting for 55.9%) and 57 questionnaires were collected from foreign joint venture enterprises (accounting for 33.8%).
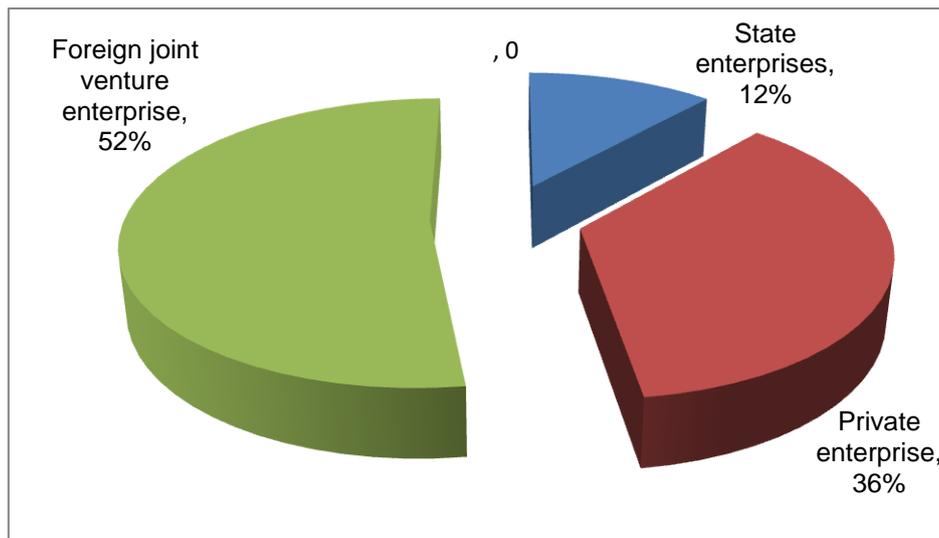
Fig.2: Structure of the type of enterprises participating in the survey

Test the reliability of Cronbach's Alpha scale for observed variables

To collect information about human resource needs for digital transformation at enterprises, the author has designed a survey form. The reliability of the scales was tested using Cronbach's Alpha coefficient.

This method of analysis also helps to eliminate the observed variables, the scales fail.

Observed variables with item-total correlation less than 0.3 will be excluded from the research model. Criteria are used to select the scale to be included in the factor analysis when the Cronbach's Alpha coefficient reaches a value of 0.6 or higher. After being included in factor analysis, the scale with Cronbach's Alpha results greater than 0.6 is accepted. The observed variables with the total variable correlation coefficient less than 0.3 will be excluded from the research model to increase the reliability of the designed scale (Table 2).

Table 2: Cronbach's Alpha of the variables in the scale of the degree of responsiveness to human resource needs for digital transformation at enterprises

Observed variables	Medium scale if variable type	Variance scale if variable type	Correlate total variable	Cronbach's Alpha if variable type
Knowledge of information technology for digital transformation: Alpha = 0.898				
KTCN1	12.6056	8.767	.821	.890
KTCN2	11.6673	9.012	.765	.901
KTCN3	120987	9.467	.876	.865
KTCN4	128002	9.545	.602	.887
KTCN5	128001	9.876	.776	.842
Awareness and ability to adapt to the trend of digital transformation: Alpha = 0.876				
NTCDS1	9.6554	6.889	.890	.880
NTCDS2	9.6122	6.909	.834	.867
NTCDS3	9.6780	7.334	.778	.920
NTCDS4	9.221	7.409	.767	.912
Skills in using technology infrastructure for digital transformation: Alpha = 0.901				
SDCN1	15.790	17.880	.801	.887
SDCN2	15.7865	19.897	.650	.921
SDCN3	15.788	18.021	.798	.898
SDCN4	15.806	17.900	.776	.887
SDCN5	15.908	17.211	.812	.847
Ability to apply computer software at work (Zoom, Ms Team, Google meet,…): Alpha = 0.897				
KNUD1	6.2330	4.211	.787	.898
KNUD2	6.6554	3.980	.747	.876
KNUD3	6.4631	3.432	.890	.821
KNUD4	6.0897	4.600	.875	.874
Skills to guide and lead the digital transformation process at enterprises: Alpha = 0.828				

KNDH1	9.2009	8.124	.812	.821
KNDH2	9.2743	7.872	.797	.812
KNDH3	9.3312	7.189	.821	.804
KNDH4	9.2443	7.121	.862	.806

Characteristic of the 4th industrial revolution is the increasing popularity of artificial intelligence and machine automation. That will bring about a combination of virtual and real systems. Therefore, businesses cannot lack a high-quality human resource. This human resource is the direct object of education and training. The enterprises participating in the survey highly appreciated the need of technological human resources for the development of the current economy.

Scale of Knowledge of Information Technology for Digital Transformation: Cronbach's Alpha coefficient is equal to 0.898. The total correlation coefficients of the variables KTCN1, KTCN2, KTCN3, KTCN4, KTCN5 all reached values greater than 0.3. Therefore, the variables KTCN1, KTCN2, KTCN3, KTCN4, KTCN5 were used in the EFA analysis in the next step.

Digital transformation has created an open space for education. Therefore, the educational environment does not only take place within the school but also extends to the global scale. That requires learners to be adaptable and sensitive to technology. Learners can actively study materials as well as interact with lecturers at any time using computers or smartphones. The emergence of E-learning allows learners instead of listening to traditional lectures, now students should approach technology to access modern knowledge. Therefore, in order to be able to update modern global knowledge, as well as apply information technology fluently when going to work, students must be good at foreign languages and information technology, master technology and capable of adapting to the trend of digital transformation.

Scale of awareness and adaptability to the digital transformation trend: Cronbach's Alpha coefficient is equal to 0.876. The total correlation coefficients of the variables NTCDS1, NTCDS2, NTCDS3, NTCDS4 are all greater than 0.3. Therefore, the variables NTCDS1, NTCDS2, NTCDS3, NTCDS4 were used in the EFA analysis in the next step.

Digital transformation is associated with the use of computer software and management information systems to convert, store, protect, process, transmit, and collect information. The fact that learners know how to proficiently use tools and programming languages to analyze, design and create software, websites and games for the market is attracting businesses' attention. This is a growing profession and is sought after by many businesses. Software companies that research, build, develop and supply software, applications to build websites, games, etc. to the market are the destinations of programmers with knowledge of operating technology. Therefore, surveyed businesses also pay great attention to this skill in learners.

Scale of skills in using technology infrastructure for digital transformation: Cronbach's Alpha coefficient is equal to 0.901. The total correlation coefficients of the variables SDCN1, SDCN2, SDCN3, SDCN4, SDCN5 all have values greater than 0.3. Therefore, variables SDCN1, SDCN2, SDCN3, SDCN4, SDCN5 are all used in EFA analysis in the next step.

Digital transformation requires learners to understand both hardware and software, be able to design package solutions for a company or organization in both hardware and software. Therefore, the ability to apply computer software in work is always given by businesses to ask candidates before hiring them. Scale of Applicability of computer software in work (Zoom, Ms Team, Google meet, …): Cronbach's Alpha coefficient is equal to 0.897. The total correlation coefficients of the variables KNUD1, KNUD2, KNUD3, KNUD4 are all greater than 0.3. Therefore, the variables KNUD1, KNUD2, KNUD3, KNUD4 were all used in the EFA analysis in the next step.

The digital world is always changing and constantly evolving to adapt to the digital society. Therefore, learners must continuously seek information, cultivate knowledge to keep up with the development of this field, and need to accumulate enough knowledge to participate in leading businesses in digital transformation. Scale of skills to guide and lead the digital transformation process at enterprises: Cronbach's Alpha coefficient is 0.828. The total correlation coefficients of the variables KNDH1, KNDH2, KNDH3, and KNDH4 are all greater than 0.3. Therefore, the variables KNDH1, KNDH2, KNDH3, KNDH4 are used in EFA analysis in the next step.

Exploratory factor analysis (EFA)

Table 3: KMO and Bartlett test results for independent variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure Adequacy		.852
Balett's test of the scale	Approx. Chi-Square	2782.722
	df	254
	Sig.	.000

KMO coefficient = 0.852 > 0.5 suitable factor analysis. Significance level (Sig.) = 0.000 < 0.05 so the variables are correlated with each other in terms of on the overall scale. Therefore, the observations made satisfy the conditions for factor analysis.

Table 4: Exploratory factor analysis EFA

	Component				
	1	2	3	4	5
SDCN1	.898				
SDCN5	.873				
SDCN4	.865				
SDCN3	.796				
SDCN2	.788				
KTCN2		.856			
KTCN1		.842			
KTCN5		.787			
KTCN3		.768			
KTCN4		.721			
KNUD4			.852		
KNUD3			.846		
KNUD1			.824		
KNUD2			.811		
NTCDS2				.848	
NTCDS3				.842	
NTCDS1				.798	
NTCDS4				.734	
KNDH3					.862
KNDH1					.860
KNDH2					.846
KNDH4					.787

Thus, the human resource needs of enterprises for digital transformation need to meet the basic requirements of knowledge, abilities, skills and practical application. The official research model is designed with 5 factors affecting the human resource needs of enterprises for digital transformation with a total of 22 observed variables.

After evaluating the reliability of the scale using Cronbach's Alpha coefficient and exploratory factor analysis EFA, the results proved that all 5 human resource factors have a great influence on digital transformation of enterprise. This result has helped the author to have a better awareness of the human resource requirements of enterprises for students studying at universities. Therefore, the author would like to make some recommendations to universities in improving the quality of training in order to help students meet the recruitment requirements of businesses in the context of digital transformation.

DISCUSSION

As a result of experimental work, it was determined that the pre-experimental level of verbal and logical thinking in students of the control and experimental groups was the same. The results of the diagnosis showed

that most students in both groups have the medium level of generalization, classification and comparison skills. The formative stage involved purposeful work for the development of techniques of verbal and logical thinking in the experimental group by involving EG students in research work. This finding is completely consistent with the idea in the study of Costa, I., et al,. (2021) when arguing that the impact of new digital technologies creates challenges for digital transformation in areas of corporate sustainability. To achieve growth goals, countries, especially emerging countries, need good labor resources with technological knowledge. They will be directly involved in bringing technology into their business and improving sustainability-related outcomes.

Analysis of the dynamics at the control stage of the experiment showed that there was an increase in the level of verbal and logical thinking in the subjects of the experimental group as a result of special experimental work. Such changes can be considered as the correct organization of the process of the development of verbal and logical thinking in students. In the context of digital transformation, learners need to accumulate knowledge related to applied technology, MIS management information system. Especially, when the covid pandemic broke out, working in the network environment has become popular. Universities need to equip learners with subjects related to multimedia, digital signatures, and electronic signatures. This makes them knowledgeable and operational right after they graduate from universities. Especially This is quite consistent with the results of previous studies in the Republic of Croatia (RC). The authors argue that business changes caused by COVID-19 have contributed to the greater use of existing online contracts and point to inconsistencies in the work of intermediaries. Therefore, students there were provided with the knowledge of online student contract issuance, signing with advanced electronic signature (Sonja, N. & Neven, V., 2021). Students in the experimental group have become better at mental operations of comparison and generalization, some use concretization, while abstraction and classification are used unconsciously, which is determined by the age peculiarities of the psyche. The use of comparison, generalization and specification operations is the basis for understanding the educational material. There have also been changes in the performance of students in the experimental group, as well as in the research activities of students.

The statistically significant differences in the dynamics of most of the subjects in the experimental and control groups, confirmed by qualitative analysis and data of additional research methods, indicate that the system of work done during the formative experiment significantly affects the effectiveness of verbal and logical thinking in students. This is quite consistent with the results of previous research by Anna, S. & Thomas, H. (2017) on how Digital Directors Drive the Digital Transformation of their Companies. The research team has clearly confirmed the role of human resources with business results. Chief Digital Officer (CDO) as the new chief executive officer at the top management level of companies undergoing digital transformation. Experiencing digital knowledge from the learning process has created success for Digital Directors at businesses.

The study shows the relevance of further research in higher education. Current research is mainly aimed at determining the level of verbal and logical thinking of preschoolers, primary and secondary school students or children with disabilities or developmental disorders (Filyutina et al., 2018; Yunus, 2021). It was determined in the course of the research that verbal and logical thinking develops and manifests itself regardless of the major, and the high level of its development is important for any future professional activity. After all, this type is characterized by generalization, critical thinking, the ability to make analogies or comparisons, the ability to logically formulate own judgments and draw appropriate conclusions.

Our results are consistent with Tussupbekova et al. (2018) that the implementation of the following pedagogical conditions contributes to the development of verbal and logical thinking in students: the inclusion of students in activities to solve professional problems and the organization of research activities, creative application of knowledge.

Research work is an integral part of professional training of students in higher education. It provides for the involvement of students in research activities, conducting experiments in order to obtain certain results, to form the students' inclination to research activities, make them learn the methods of scientific knowledge, develop the ability to work in creative teams, with literature. An important indicator of a high level of verbal and logical thinking is the student's writing a quality research paper (abstracts, articles, degree project) and the ability to present it and participate in scientific discussions and debates. This author has also mentioned in his previous studies (Nguyen Thi Hang, 2021a; Nguyen Thi Hang, 2021b; Nguyen Thi Hang, 2021c; Tuan.T.M, Hung.N.Q & Hang.N.T., 2021).

We agree with Nuriddinov, Normamatov and Nuriddinov (2020) that students should be involved in research work from the first years of study and continue this work throughout their studies at the educational institution. Moreover, the technology of organization of research work is an integral part of professional training of students in the digital environment (Andryushin, Shcherbatov & Makarevich, 2018).

Research work of students serves to form a highly qualified, creatively thinking specialist who is able to independently solve the problems that he/she faces (Povidaychyk, 2016).

Interviews with students of the experimental group and analysis of research papers (Hevko et al., 2021; Moiseev et al., 2019) allowed concluding that research activities of students ensures the most complete manifestation of individuality, creativity, readiness for self-fulfilment. The main tasks of research work of

students are: instilling and independent fulfilment of personal and creative abilities of students (comprehensive development of the student's personality, formation of his objective self-esteem, thinking skills, creativity) (Syahrin, Suwignyo & Priyatni, 2019); learning the methodology of rational and effective acquisition and use of knowledge; introduction into the modern methods of work with scientific literature and information sources; acquisition of skills of creative scientific and research activity (Karpenko, 2018); identification of capable young people for further study in a post-graduate course, work in departments and research laboratories.

CONCLUSIONS

Developing digital government, digital economy, digital society, and forming digital technology enterprises with global integration capacity are the existential requirements for society. In order to realize that goal, human resource is one of the important factors, so universities need to have an appropriate human resource training strategy to supply the labor market. Universities need to identify human resource training for business digital transformation as a key task in training. Therefore, in addition to providing learners with necessary computer knowledge, it is necessary to improve learners' skills and implement digital transformation training programs. Universities need to deploy learning programs on digital transformation and digital skills for learners. Implement training in information technology and digital transformation knowledge and skills; promoting linkages between information technology enterprises and research institutes and schools to train human resources.

Digital transformation is one of the urgent needs for universities. Universities need to aim to form a "digital university" model. Universities need to define overall goals and clearly state the direction of the digital transformation process. Universities need to see digital transformation strategies as the first step and the basis for successful implementation of digital transformation goals. Simultaneously, promoting the innovation model, combining training activities in universities with enterprises to promote research results and information technology application in real business development.

Universities need to change operations on digital platforms. Starting with admissions, universities need to use digital tools. Teaching activities need to be done in a digital environment so that students can study at any location with Internet connection without having to go to school. Universities need to systematically build online learning materials so that students can have distance learning materials over the Internet. Universities need to build an online lecture system so that students can study on their own in the network environment. It is necessary to build an online assessment system so that students can self-assess their progress in the training process at universities.

Scientific research activities also play an important role in improving the quality of training. Therefore, universities need to apply the Digital Transformation model in scientific research to help lecturers and students have conditions to participate in many domestic and international scientific conferences conducted in the digital environment. It is necessary to create conditions for lecturers and students to contact and exploit scientific documents in the digital environment for scientific research activities. From there, both teachers and students have the opportunity to access monographs and published scientific works to raise awareness. The university's scientific research works in the digital transformation process are also conducted in an application-oriented manner to help promote the digitalization process at businesses. The next research areas the author will aim to identify output standards to support the development of training programs at universities to meet the needs of human resources for businesses in the context of digital transformation and the development of the current industrial revolution 4.0.

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